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ABSTRACT

A study looked at the effects of simulated encounters with instrumental music teaching problems upon the attitudes of instrumental music majors toward teaching and toward music teaching. Videotapes of critical teaching situations were developed and presented to an experimental group of college music majors workshop. A pretest-posttest control group design was used. The experimental group showed a significant increase in positive attitudes toward pupils and toward teaching careers in music, especially among freshman and sophomore students. A second posttest, administered after a delay of thirty days, revealed no significant differences between the experimental and control groups. On the basis of the study application of simulation techniques and more extensive use of videotape in music teacher education were recommended. (JY)

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FINAL REPORT
Project No. 1-I-006
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THE DEVELOPMENT OF SIMULATED CRITICAL TEACHING SITUATIONS ON VIDEO TAPE FOR USE IN INSTRUMENTAL MUSIC TEACHER EDUCATION

March 1972

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THE DEVELOPMENT OF SIMULATED CRITICAL TEACHING SITUATIONS ON VIDEO TAPE FOR USE IN INSTRUMENTAL MUSIC TEACHER EDUCATION

Project No. 1-I-006
Contract No. OEC 9-71-0016 (057)

David H. Walters

March 1972

The research reported herein was performed pursuant to a contract with the Office of Education, U.S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

Arizona State University

Tempe, Arizona

ABSTRACT

It was the purpose of this study to determine the effects of simulated encounters with instrumental music teaching problems upon the attitudes of instrumental music majors toward teaching and toward music teaching.

Videotapes of critical teaching situations were developed and presented to the experimental group in a two-day workshop. A pretest-posttest control group design was used. Attitudes were measured by the Minnesota Teacher Attitude Inventory and the Cady Survey of Music Career Preferences (unpublished). Stastical analysis consisted of the factorial analysis of covariance and *t* tests.

The experimental group showed a significant increase (at the .05 level) in positive attitudes toward pupils and toward teaching careers in music. However, a second post-test, administered thirty days after the pretest, revealed no significant differences between the experimental and control groups. Freshman and sophomore students were found to be considerably more sensitive to treatment than junior and senior students.

Recommendations based on these results include: (1) further application of simulation techniques and more extensive use of videotape in music teacher education, (2) replication of the experiment with a longer treatment period or repeated treatments, and (3) changes in the traditional music education curriculum which will provide real or simulated music teaching experiences for freshman and sophomore students.

TABLE OF CONTENTS

	Page
LIST OF TABLES	v
CHAPTER	
I. THE PROBLEM	1
Significance of the Study	1
Purpose	4
Definition of Terms	5
Brief Statement of Procedure	6
Questions and Hypotheses	8
Limitations	11
Assumptions	12
Organization of the Study	12
II. REVIEW OF RELATED LITERATURE	14
Simulation	14
Use of Videotape in Teacher Education	25
Media in Music Teacher Education	27
Attitude as it Relates to Teaching	31
Music Teaching and Attitude	34
Summary	38
III. PROCEDURE	40
Preparation of Videotapes	40
Population	43
Instruments	44
Design	47

CHAPTER Page

Testing Procedure 49

Experimental Workshop 50

Treatment of Data 51

IV. RESULTS 53

Report of Descriptive Data 53

Results of Analysis of Covariance . . . 59

Results of t Tests 64

V. CONCLUSIONS AND RECOMMENDATIONS 80

Treatment of Hypotheses 80

Conclusions 85

Recommendations for Teacher Preparation. 87

Recommendations for Further Research . . 89

BIBLIOGRAPHY 90

APPENDICES 96

LIST OF TABLES

Table		Page
1.	Means and Standard Deviations - MTAI Key A Test I (Pretest - First Posttest)	54
2.	Means and Standard Deviations - MTAI Key B Test I (Pretest - First Posttest)	54
3.	Means and Standard Deviations - MTAI Key C Test I (Pretest - First Posttest)	55
4.	Means and Standard Deviations - Cady Test I (Pretest - First Posttest)	55
5.	Means and Standard Deviations - MTAI Key A Test II (Pretest - Second Posttest)	56
6.	Means and Standard Deviations - MTAI Key B Test II (Pretest - Second Posttest)	56
7.	Means and Standard Deviations - MTAI Key C Test II (Pretest - Second Posttest)	57
8.	Means and Standard Deviations - Cady Test II (Pretest - Second Posttest)	57
9.	Value of F - MTAI Key A Test I (Pretest - First Posttest)	59
10.	Value of F - MTAI Key B Test I (Pretest - First Posttest)	60
11.	Value of F - MTAI Key C Test I (Pretest - First Posttest)	60
12.	Value of F - Cady Test I (Pretest - First Posttest)	61
13.	Value of F - MTAI Key A Test II (Pretest - Second Posttest)	61
14.	Value of F - MTAI Key B Test II (Pretest - Second Posttest)	62
15.	Value of F - MTAI Key C Test II (Pretest - Second Posttest)	62

Table | Page

16. Value of F - Cady Test II (Pretest - Second Posttest) 63

17. Value of t - Control Group Test I (Pretest - First Posttest) 64

18. Value of $\underline{t}$ - Control Group Test II (Pretest - Second Posttest) 65

19. Value of t - Seniors Test I (Pretest - First Posttest) 66

20. Value of $\underline{t}$ - Seniors Test II (Pretest - Second Posttest) 67

21. Value of t - Juniors Test I (Pretest - First Posttest) 68

22. Value of $\underline{t}$ - Juniors Test II (Pretest - Second Posttest) 69

23. Value of t - Freshmen & Sophomores Test I (Pretest - First Posttest) 70

24. Value of $\underline{t}$ - Freshmen & Sophomores Test II (Pretest - Second Posttest) 71

25. Value of t - Students Without St. Teach. Exp. Test I (Pretest - First Posttest) 72

26. Value of $\underline{t}$ - Students Without St. Teach. Exp. Test II (Pretest - Second Posttest) 73

27. Value of t - Student Teachers Test I (Pretest - First Posttest) 74

28. Value of $\underline{t}$ - Student Teachers Test II (Pretest - Second Posttest) 75

29. Pretest Correlation Coefficients Test I (Pretest - First Posttest) 76

30. Pretest Correlation Coefficients Test II (Pretest - Second Posttest) 77

31. Posttest Correlation Coefficients Test I (Pretest - First Posttest) 78

32. Posttest Correlation Coefficients Test II (Pretest - Second Posttest) 79

CHAPTER I

THE PROBLEM

The real problem in teacher education, of course, is to modify the actual instructional behavior of teachers in desired directions. Most teacher educators believe that changes in the teacher's knowledge or attitudes will be accompanied by subsequent changes in his classroom behavior. Even though this may be so, there are few instructional materials, e.g., texts, programs, films, which have been demonstrated to be capable of bringing about changes in the teacher's professional knowledge or attitudes, even changes which can be assessed by paper-and-pencil tests.[1]

Significance of the Study

Teachers of instrumental music are often confronted with problems which require immediate decisions. Many of these problems are of a musical nature, such as rhythmic inaccuracy or unmatched pitches. One of the primary duties of the teacher/conductor is the detection and identification of these performance errors and the prescription of possible solutions to correct such errors. Other problems, such as pupil evaluation and misbehavior in the classroom, are extramusical and are common to all subject matter areas. However, these problems may be intensified in music classes due to large class size and

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[1] W. James Popham, "Instructional Video Tapes in Teacher Education," AV Communication Review, XIV (Fall 1966), 372.

the dependence of members of musical organizations upon each other in the performance of music. Beginning teachers are sometimes disillusioned because their training has not adequately prepared them for the problems they encounter.

Hypothetical teaching problems and their solutions are verbally described in educational methods classes. However, verbal instruction must be preceeded by perception if new concepts are to be formed. When perceivable phenomena are not presented in class, each student draws upon his own previous perceptual experiences and the acquired concepts vary considerably. Communication breaks down and concept formation is replaced by verbal memorization.

Critical teaching situations are sometimes encountered in student teaching but cannot be selected or controlled. Some supervising music teachers, faced with the pressures of public performance, are reluctant to allow student teachers to assume responsibility and thus deprive them entirely of problem-solving experiences. Mistakes made during student teaching tend to destroy the student teacher's confidence in his own ability to teach and may also create a negative attitude toward instruction on the part of the students. A student teacher should be prepared to cope with classroom problems before he faces an actual classroom situation.

Through the use of media it is now possible to bridge the gap between theory and practice by creating accurate, perceivable representations of realistic situations: a technique known as simulation. This technique has been used in many training programs but has not yet been applied to the preparation of instrumental music teachers.

The possible effect that confrontations with simulated situations may have upon attitude is particularly important in music teacher education. Snapp[2] and Cady[3] indicate that many college students who seek degrees in music education view themselves primarily as performers and would prefer other careers in music to teaching. Therefore, music teacher education is critically in need of a program which will either affect a positive change in attitude toward teaching or will serve to polarize attitudes so that those who have no interest in teaching may be discouraged from entering the teaching profession. Any program designed to fulfill this need seems worthy of investigation.

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[2]Kenneth O. Snapp, "Development of a Musicians Interest Inventory for Use in Vocational and Educational Guidance" (unpublished doctoral dissertation, Indiana University, 1953).

[3]Henry L. Cady, "Survey of Music Career Preferences" (Columbus: The Ohio State University, 1970). (Mimeographed.)

Purpose

This study was based on the recognition that many music education students do not have positive attitudes toward the teaching of music. The purpose of this study was to determine the effects simulated encounters with instrumental music teaching problems would have upon the attitudes of instrumental music majors toward teaching and toward toward music teaching. More specifically, the purpose of this investigation was to answer the following questions: (1) Do simulated encounters with instrumental music teaching problems significantly affect the attitudes of instrumental music education majors toward teaching? (2) Do simulated encounters with instrumental music teaching problems significantly affect the attitudes of instrumental music education majors toward the teaching of music? (3) At what class level are simulated encounters with instrumental music teaching problems most effective in terms of attitudinal changes? (4) Are attitudes toward teaching and toward music teaching most likely to be affected if simulated encounters with music teaching problems are presented to the student before or during his student teaching experience?

Definition of Terms

To assist the reader in perceiving meanings of concepts as they are used in this study, a definition of terms and concepts will be helpful.

Attitude. The term "attitude" is defined in the Encyclopedia of Educational Research as

> A psychological construct, or latent variable, inferred from observable responses to stimuli, which is assumed to mediate consistency and covariation among these responses.[4]

This definition of attitude is based upon the belief that attitude will be expressed in some type of observable behavior. The phrase "observable responses" evidences the necessity of including the concept of outward manifestation of attitude into a definition of the term.

> Actually, "attitude" is a word used to refer to a general tendency of an individual to act in a certain way under certain conditions.
> Our use of the word "attitude" is based on what someone says or what he does. It is based on visible behavior.[5]

In this study, attitude refers to observable behavior patterns of approach to and avoidance of certain stimuli. Attitude change refers to any change in these behavior patterns.

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[4]Chester W. Harris (ed.), The Encyclopedia of Educational Research (New York: The Macmillan Company, 1960), p. 103.

[5]Robert F. Mager, Developing Attitude Toward Learning (Palo Alto: Fearon Publishers, 1968), p. 14.

Simulation. Simulation as used in this experiment is defined as the creation of accurate, perceivable representations of real situations.

Critical teaching situation. This concept refers to a situation which demands an immediate response on the part of the teacher. Most of these situations, though not all of them, occur in the classroom. Failure to respond effectively to these situations is likely to result in a loss of rapport between teacher and student or an interruption of the learning process, hence the term "critical."

Brief Statement of Procedure

Ten video tapes of critical teaching situations were prepared from approximately four hours of material taped at three Phoenix area schools. The problems selected for taping were determined by a questionnaire sent to all 160 members of the Arizona Band and Orchestra Directors Association. The problems selected by the music teachers completing the questionnaire were: (1) Motivation, (2) Selecting Literature, (3) Discipline, (4) Intonation, (5) Sight Reading, (6) Evaluation, (7) Rehearsal Procedures, (8) Musical Illiteracy, (9) Rhythmic Inaccuracy, and (10) Scheduling. Authenticity of the tapes was determined by a jury of six experienced music educators whose classes were not involved in the experiment.

All of the instrumental music education majors at Arizona State University were asked to participate in the experiment. The sixty-nine students who completed the pretest were divided into five groups: Freshmen, Sophomores, Juniors, Seniors without student teaching experience, and Seniors engaged in student teaching at the time of the experiment. Students from each of these groups were randomly assigned to experimental and control groups on 2:1 ratio. Both groups were given a pretest on October 4, 1971, a posttest on October 7, 1971 and a second posttest on November 3, 1971. The sample consisted of the fifty-seven students who completed the pretest and either or both of the posttests.

The experimental treatment consisted of a two-day workshop on October 6-7, 1971. Each member of the experimental group viewed each of the tapes, decided upon a solution to the problem presented, and then discussed with other viewers the possible causes for the situation and consequences of the solutions suggested. Viewing and discussion were handled in small groups, each under the supervision of an experienced music educator.

The instruments utilized in this study were the Minnesota Teacher Attitude Inventory (Form A) (MTAI)[6] and the Cady Survey of Music Career Preferences (Cady).[7]

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[6]Walter W. Cook, Carroll H. Leeds and Robert Callis, "Minnesota Teacher Attitude Inventory" (New York: The Psychological Corporation, 1951).

[7]Cady, op. cit.

Questions and Hypotheses

The stated purpose of the study suggested four main questions to be answered by tests of a number of null hypotheses.

Question Number One. Do simulated encounters with instrumental music teaching problems significantly affect the attitudes of instrumental music education majors toward teaching?

H_01: There is no significant difference immediately after the experimental treatment between the attitudes toward pupils of university students who have had simulated encounters with instrumental music teaching problems and the attitudes of students who did not have this experience, as measured by the MTAI.

H_02: There is no significant difference thirty days after the experimental treatment between the attitudes toward pupils of university students who have had simulated encounters with instrumental music teaching problems and the attitudes of students who did not have this experience, as measured by the MTAI.

H_03: There is no significant difference between the pretest and first posttest scores of the control group as measured by the MTAI.

H_04: There is no significant difference between the pretest and second posttest scores of the control group as measured by the MTAI.

Question Number Two. Do simulated encounters with instrumental music teaching problems significantly affect the attitudes of instrumental music education majors toward the teaching of music?

H_05: There is no significant difference immediately after the experimental treatment between the attitudes tc ard careers within music of university students who have had simulated encounters with instrumental music teaching problems and the attitudes of students who did not have this experience, as measured by the Cady Survey.

H_06: There is no significant difference thirty days after the experimental treatment between the attitudes toward careers within music of university students who have had simulated encounters with instrumental music teaching problems and the attitudes of students who did not have this experience, as measured by the Cady Survey.

H_07: There is no significant difference between the pretest and first posttest scores of the control group as measured by the Cady Survey.

H_08: There is no significant difference between the pretest and second posttest scores of the control group as measured by the Cady Survey.

Question Number Three. At what class level are simulated encounters with instrumental music teaching problems most effective in terms of attitudinal changes?

H_09: There is no significant difference between the MTAI pretest and first posttest scores of the freshmen and sophomores in the treatment group.

H_010: There is no significant difference between the MTAI pretest and second posttest scores of the freshmen and sophomores in the treatment group.

H_011: There is no significant difference between the Cady Survey pretest and first posttest scores of the freshmen and sophomores in the treatment group.

H_012: There is no significant difference between the Cady Survey pretest and second posttest scores of the freshmen and sophomores in the treatment group.

$H_0$13: There is no significant difference between the MTAI pretest and first posttest scores of the juniors in the treatment group.

$H_0$14: There is no significant difference between the MTAI pretest and second posttest scores of the juniors in the treatment group.

$H_0$15: There is no significant difference between the Cady Survey pretest and first posttest scores of the juniors in the treatment group.

$H_0$16: There is no significant difference between the Cady Survey pretest and second posttest scores of the juniors in the treatment group.

$H_0$17: There is no significant difference between the MTAI pretest and first posttest scores of the seniors in the treatment group.

$H_0$18: There is no significant difference between the MTAI pretest and second posttest scores of the seniors in the treatment group.

$H_0$19: There is no significant difference between the Cady Survey pretest and first posttest scores of the seniors in the treatment group.

$H_0$20: There is no significant difference between the Cady Survey pretest and second posttest scores of the seniors in the treatment group.

Question Number Four. Are attitudes toward teaching and toward music teaching most likely to be affected if simulated encounters with music teaching problems are presented to the student before or during his student teaching experience?

$H_0$21: There is no significant difference between the MTAI pretest and first posttest scores of the students in the treatment group who have not had student teaching experience.

$H_0$22: There is no significant difference between the MTAI pretest and second posttest scores of the students in the treatment group who have not had student teaching experience.

$H_0$23: There is no significant difference between the Cady Survey pretest and first posttest scores of the students in the treatment group who have not had student teaching experience.

$H_0$24: There is no significant difference between the Cady Survey pretest and second posttest scores of the students in the treatment group who have not had student teaching experience.

$H_0$25: There is no significant difference between the MTAI pretest and first posttest scores of the students in the treatment group who are currently engaged in student teaching.

$H_0$26: There is no significant difference between the MTAI pretest and second posttest scores of the students in the treatment group who are currently engaged in student teaching.

$H_0$27: There is no significant difference between the Cady Survey pretest and first posttest scores of the students in the treatment group who are currently engaged in student teaching.

$H_0$28: There is no significant difference between the Cady Survey pretest and second posttest scores of the students in the treatment group who are currently engaged in student teaching.

Each of the twenty-eight null hypotheses was retained or rejected on the basis of statistical tests discussed in the treatment of the data.

Limitations

This study involved only undergraduate university students majoring in instrumental music education. Arizona State University was the only teacher education institution involved. The treatment was limited to a two-day workshop.

This study did not attempt to measure the effectiveness of the university student's responses to the critical teaching situations presented. Neither was an attempt made to prove an effect of the treatment upon the student's teaching success, either immediate or future.

Assumptions

The following assumptions were made:

1. The instruments utilized and methods employed in this study are valid, reliable and suited to the purpose of the study.

2. Scheduling difficulties which prohibited a portion of the population from completing the series of tests and thus participating in the experiment had no bearing on the reliability of the sample.

3. Any contact which members of the control group may have had with children through non-university oriented experiences had no significant effect upon the results of the study, due to random assignment to groups.

Organization of the Study

The pertinent literature will be reveiwed in Chapter II. Research on simulation as an educational technique will be reveiwed, use of videotape in teacher education will be described and studies concerned with the relationship between attitude and teaching will be reported. Particular emphasis will be placed upon the literature pertaining to the teaching of music.

The procedures followed will be described in Chapter II. The preparation of the videotapes will be discussed, followed by a description of the sample and a report of treatment procedures. The instruments employed, the experimental design and the treatment of the data will then be described.

In Chapter IV the results of the study will be reported, primarily in table form, followed by a discussion of the findings.

CHAPTER II

REVIEW OF RELATED LITERATURE

Two broad areas were considered relevant to this study: (1) simulation in music teacher education by means of videotapes and (2) the study of attitudes and their relation to the education of music teachers. Certain restrictions on the review were deemed necessary; therefore, a discussion of the definition and measurement of attitude is not included. An extensive body of literature is available for the interested reader on these subjects. From the two general areas, the following topics were selected as pertinent: (1) Simulation, (2) Use of Videotape in Teacher Education, (3) Media in Music Teacher Training, (4) Attitude as it Relates to Teaching and (5) Music Teaching and Attitude.

Simulation

A definition and an explanation of simulation are set forth by Twelker.[1] Twelker defines simulation as

> (1) a technique of modeling (physically, iconically, verbally, or mathematically) some aspects of a real or proposed system, process, or environment; or (2) the model (physical, iconic, verbal, or mathematical) of some aspects of a real or proposed system, process, or environment.[2]

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[1]Paul A Twelker, Simulation: An Overview (Monmouth, Oregon: Teaching Research Division, Oregon State System of Higher Education, 1968).

[2]Ibid., p. 3.

Twelker explains how simulation can be used in research, development and instruction. Three instructional uses are described: (1) presenting information through concrete or iconic models that illustrate concepts or principles more clearly than do words, (2) eliciting responses by providing opportunities for practice of previously learned principles, and (3) assessing performance that is often untestable by other means.

> In one sense, simulation does not represent as much a tangible thing or process as it does a philosophy. This philosophy is best thought of as a fusion of two worlds - the instructional world and the real-life world.[3]

> The philosophy of simulation also implies that attention should be given to making the learner a participant *in* a realistic learning experience rather than an observer *of* a learning experience. Simulation represents in the educational sense a new and different experience for the learner.[4]

> The philosophy of simulation also implies a unique opportunity to integrate the cognitive, affective, and psychomotor aspects of learning... Educators are often prone to separate instructional objectives into neat categories (cf., Bloom, 1953; Krathwohl, *et al.*, 1964), and often neglect to integrate what has been thought of as separate. Further, the emphasis on passive reception through lectures, textbooks, and the like, often leave little room for the activities that integrate the various types of objectives in a way that is meaningful. Simulation offers teachers, for example, an opportunity to deal with their emotions in handling the problems that demand the application of previously learned principles in classroom management and instruction. Valid educational principles might prove of little value if the teacher reacted in a negative emotional manner during a demanding occasion of decision-making.[5]

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[3] *Ibid.*, p. 46.

[4] *Ibid.*, p. 47.

[5] *Ibid.*, p. 48.

Simulation techniques have been used for many years in the training of military personnel. War games, basically conceptual in design, date back to the early 1800's.[6] Physical simulation models which reproduce flight conditions with considerable fidelity have evolved from the Link Flight Trainer, developed during World War II.[7] Other military uses of simulation include an air defense simulator developed by the Systems Research Laboratory of the Rand Corporation[8] and "Monopologs," a simulation exercise in inventory management used by the Air Force.[9]

Simulation has become widely accepted by business and industry as a means of preparing individuals for managerial positions. Kibbee, Craft and Nanus describe over one-hundred such applications.[10] Examples of these

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[6]Paul S. Greenlaw, Lowell W. Herron and Richard H. Rawdon, Business Simulation in Industry and University Education (Englewood Cliffs, N.J.: Prentice-Hall, 1962), p. 7.

[7]Jack A Adams, "Some Considerations in the Design and Use of Dynamic Flight Simulators," Simulation in Social Science: Readings, ed. Harold Guetzkow (Englewood Cliffs, N.J.: Prentice-Hall, 1962), pp. 29-47.

[8]Robert L. Chapman, John L. Kennedy, Allen Newell and William C. Biel, "The Systems Research Laboratory's Air Defense Experiments," Simulation in Social Science: Readings, ed. Harold Guetzkow (Englewood Cliffs, N.J.: Prentice-Hall, 1962), pp. 172-188.

[9]Joel M. Kibbee, Clifford J. Craft and Burt Nanus, Management Games: A New Technique for Executive Development (New York: Reinhold Publishing Corporation, 1961), pp. 188-89.

[10]Ibid., pp. 315-336.

are the American Management Association's "Top Management Decision Simulation," [11] Remington Rand Univac's "Marketing Management Simulation"[12] and Dayco Corporation's "Dayton Tire Simulation."[13] All of these simulation exercises are designed to enable business executives and future executives to learn from decision-making errors without jeopardizing their professional careers.

In the field of education, simulation techniques were first used in driver training. Stationary simulated automobiles were developed to teach behind-the-wheel driving skills. These simulators continue to be used in many driver education programs.[14]

One of the first applications of simulation in professional education was the Whitman School experiment for the evaluation and training of school administrators. A simulated setting was created which permitted each participant to practice making administrative decisions by assuming the role of principal at the hypothetical Whitman Elementary School.[15]

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[11] Ibid., pp. 165-166.

[12] Ibid., pp. 15-33.

[13] Ibid., p. 319.

[14] Cecil G. Zaun and Melvin T. Schroeder, "The Driver Trainer: A Teaching Machine," Journal of Secondary Education, XXXVII (February, 1962), 112-116.

[15] Norman Frederiksen, "In-Basket Tests and Factors in Administrative Performance," Simulation in Social Science: Readings, ed. Harold Guetzkow (Englewood Cliffs, N.J.: Prentice-Hall, 1962), pp. 124-137.

Simulation appears to be regarded as a useful tool by many institutions specializing in the training of school administrators. In response to a survey conducted in 1965, ninety institutions reported 125 professors as users of simulation techniques.[16]

Simulation was applied to the preparation of classroom teachers by Kersh at the Teaching Research Laboratory of the Oregon State System of Higher Education.[17] A simulation facility was constructed and techniques developed for simulating a variety of classroom problems. Through the use of sound motion pictures, participants in the project are presented with problems occuring in a simulated sixth grade classroom identified as "Mr. Land's Sixth Grade." After viewing each problem sequence, the prospective teacher enacts a response which is observed by a supervisor through one-way glass. The supervisor then selects an appropriate feedback sequence, thus enabling the student teacher to view the possible consequences to his handling of each problem.

Kersh conducted several experiments to determine how this material could best be used. One experiment was aimed at determining the need for realism in the projected

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[16] Morris J. Weinburger, "The Use of Simulation in the Teaching of School Administrators" (unpublished doctoral dissertation, Columbia University, 1965).

[17] Bert Y. Kersh, Classroom Simulation: A New Dimension in Teacher Education, Final Report, USOE Title VII, Project No. [illegible] (Monmouth, Oregon: Teaching Research Division, Oregon State System of Higher Education, 1963).

image. Four groups of teacher-trainees were given the same visual instruction, varying only in the realism of the screen projection. Group I viewed life-size motion pictures; Group II viewed motion pictures greatly reduced in size; Group III viewed life-size still projections and Group IV viewed smaller still projections. A pretest-posttest design was used and an analysis of variance performed. Kersh found smaller, less realistic projections to be significantly more effective (at the .05 level) for instructional use than life-size projections.[18]

In another experiment, Kersh compared the post-test performance of students who enacted responses to filmed problems to the performance of those who simply described how they would respond.[19] No significant difference was found between the two modes of response.

Kersh's simulation materials were used by Beals in a study to determine whether simulated classroom experience can effectively substitute for live pre-student-teaching experience.[20] Junior level students were randomly assigned

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[18] Ibid.

[19] Bert Y. Kersh, Classroom Simulation: Further Studies on Dimensions of Realism, Final Report, NDEA Title VII, Project No. 5-C[illegible] (Monmouth, Oregon: Teaching Research Division, Oregon State System of Higher Education, 1965).

[20] Paul E. Beals, Classroom Simulation as a Substitute for Live Pre-Student-Teaching Laboratory Experiences (Shippensburg, Pa.: Shippensburg State College, 1970).

to three treatments: (1) two weeks of classroom observation and participation; (2) one week of live observation and participation followed by one week of simulated classroom experience; (3) one week of simulated classroom experience. Criterion measures consisted of the Minnesota Teacher Attitude Inventory and four measures of student teaching performance. Analysis of variance and Pearson product-moment correlation revealed no significant differences between the three groups in student teaching performance or in attitude toward teaching.

Vlcek used Kersh's materials to investigate the effect of simulated classroom experience on the ability of prospective teachers to identify and cope with actual classroom problems and on their self-confidence in teaching.[21]

A two-group design was employed. The experimental group received nine hours of simulated classroom experience in which classroom problems and feedback sequences were projected in sound, motion and color on a large projection screen. Prospective teachers responded to each problem presented and immediately observed the classroom behavior elicited by their response.

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[21]Charles W. Vlcek, "Assessing the Effect and Transfer Value of a Classroom Simulator Technique" (unpublished doctoral dissertation, Michigan State University, 1965).

A posttest and an observational record form were developed to evaluate awareness of problems, response to problems and application of principles. The posttest was administered immediately after the experimental treatment; the observational record form was used by the university coordinator, classroom supervising teachers and three trained observers during student teaching. A confidence scale was also developed and administered on a pretest-posttest schedule. Analysis of variance was used to compare the two groups. It was found that awareness of problems is not developed through simulated classroom experience but that effective responses to classroom problems, principles which can be used in solving classroom problems and confidence in ability to teach can be developed through simulation.

Another set of simulation materials, entitled "Teaching Problems Laboratory,"[22] was developed by Cruickshank, Broadbent and Bubb in connection with a study to determine the effectiveness of simulation for presenting critical teaching problems.[23] "Teaching Problems Laboratory" is in many ways similar to "Mr. Land's

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[22] Donald R. Cruickshank, Frank W. Broadbent and Roy Bubb, Teaching Problems Laboratory (Chicago: Science Research Associates, 1967).

[23] Donald R. Cruickshank and Frank W. Broadbent, The Simulation and Analysis of Problems of Beginning Teachers, U.S. Office of Education Cooperative Research Project No. 5-0793 (Washington D.C.: Government Printing Office, 1968).

Sixth Grade," but controlled feedback is not provided. Instead, feedback results from the reactions of fellow participants. Each participant assumes the role of a beginning fifth-grade teacher. Critical teaching problems are presented to him by means of films, role plays and written incidents. He reacts by identifying each problem and deciding upon a solution. The participants as a group then discuss the incidents, their hypotheses and projected consequences.

Cruickshank and Broadbent hypothesized that simulated classroom experience would result in (1) fewer teaching problems, (2) improved teaching performance, (3) more positive attitudes toward teaching, (4) greater self-confidence and (5) less training time required before assuming full-time teaching responsibility. These hypotheses were tested using a pretest-posttest control group design. Teaching problems were measured by a perceived problems inventory: teaching performance by a classroom observation record and a student teacher evaluation report; attitude by the Minnesota Teacher Attitude Inventory; confidence by a confidence scale; and time required to assume responsibility by a report from each supervising teacher. Results of the tests generally favored the experimental group, but the only significant finding was that fewer teaching problems occured among the student teachers who had received simulation training. However, Cruickshank and Broadbent

noted that student teaching resulted in no more significant changes in student teacher behavior than did simulated classroom experience. They concluded:

> It can be said that the simulation training when tested under the most stringent conditions was an unqualified success as a teaching device that motivates and involves students and that, although simulation was only partially successful in changing the student teachers' behavior, it was at least as effective as an equal amount of student teaching.[24]

Gaffga conducted a study to determine whether Cruickshank and Broadbent's "Teaching Problems Laboratory" provides the framework to effectively observe student teacher behavior.[25] A two-group design was used in which the experimental group took part in the simulation project. Student teachers in both groups were rated by two education professors, the college supervisor and the cooperating teacher, using Ryans' classroom observation record. In addition, members of the experimental group were rated by two observers in the simulated setting. The various ratings for each student were compared, using Spearman rank correlation coefficients and Mann-Whitney U tests. Gaffga concluded that behavior can be observed effectively in the simulated setting as later exhibited in regular student teaching and that simulation does produce a change in the teaching behaviors of student teachers.

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[24] Ibid., p. 110.

[25] Robert K. Gaffga, "Simulation: A Method for Observing Student Teacher Behavior" (unpublished doctoral dissertation, University of Tennessee, 1967).

The use of simulation techniques to affect attitudinal changes toward professional course objectives was investigated by Bond.[26] A two-group design was employed. Using Kersh's classroom simulator, each member of the experimental group was required to practice problem-solving until an established level of performance was achieved. Bond found no significant differences between the two groups, but noted a trend toward positive attitude change for the group receiving simulated classroom experiences as a part of instruction.

Hart also conducted a study concerning the effects of simulation upon attitude.[27] Four sections of a political science course were used in a Solomon four-group design. Two of the sections were randomly selected for simulation training. A semantic differential was used to test attitudinal differences and course unit tests were given to measure cognitive differences between groups. Data were analyzed by analysis of covariance, chi-square and t tests. Significant differences were found in the polarization of attitudes between the groups exposed to a simulation experience and the groups which were not.

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[26] Jack H. Bond, Using Simulation Techniques to Change Attitudes of Education Majors Toward Professional Course Objectives (Monmouth, Oregon: Oregon State System of Higher Education, 1965).

[27] William K. Hart, An Analysis of the Usefulness of Simulation Games in Affecting Attitudinal Changes and Skill-Type Learning (San Diego: U.S. International University, 1970).

Use of Videotape in Teacher Education

The use of videctape recording equipment is central to several programs in teacher education. Among those mentioned in articles by Gibson[28] and by Johnscn, Frantz and Schultz[29] are: (1) microteaching, (2) model teaching demonstrations, (3) student teacher observation, (4) classroom observation and (5) simulation.

Although these programs could be carried out by means of sound films, the recent availability of portable videotaping equipment may have contributed to their development. Videotape recording offers several distinct advantages: (1) comparatively low cost, (2) immediate opportunity for replay of tapes, and (3) almost indefinite tape re-use capability.[30]

Videotaping is currently a part of the teacher education programs of many colleges and universities and is used to train teachers in various subject matter areas. Pinney and Miltz[31] report extensive use of the videotape recorder at Stanford University where, under the direction

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[28] James W. Gibson, "Using Videotape in the Training of Teachers," Speech Teacher, XVII (March, 1968), 107-109.

[29] James A. Johnscn, Nevin R. Frantz, Jr., and James V. Schultz, "Videotape Recording in Teacher Education," Educational Technology, IX (May, 1969), 48-53.

[30] Gibson, op cit., p. 107.

[31] Robert M. Pinney and Robert J. Miltz, Television Recordings and Teacher Education: New Directions (Stanford: Stanford University, 1968).

of Dwight W. Allen, the microteaching concept was developed. It is also being used in counselor education at Indiana State University,[32] in the training of foreign language teachers at Pittsburgh University,[33] and in the developmental reading practicum at Clark College.[34] McHenry describes the use of video techniques at three Utah teacher training institutions.[35] A series of articles sponsored by the Multi-State Teacher Education Project lists eleven other colleges and universities which use videotaping processes to train teachers in such diversified fields as arithmetic, reading, counseling and mathematics.[36]

The effectiveness of videotaped instruction was investigated by Popham.[37] Four taped instructional pro-

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[32]Lawrence Beymer, "Implications of Simulation, Videotape Recording, Analysis Systems and Research for Counselor Education," Educational Technology, IX (August 1969), 56-57.

[33]Christina Bratt Paulston, The Use of Video-Tape in the Training of Foreign Language Teachers (Pittsburgh: Pittsburgh University, 1970).

[34]Alden J. Moe and Sister Mary Dorothy Feehan, The Use of Videotape Recorders in the Training of Reading Teachers (Dubuque: Clarke College, 1968).

[35]Vere A. McHenry, The Use of Video Processes in Teacher Education (Salt Lake City: Utah State Board of Education, 1968).

[36]Howard E. Bosley (ed.) and Harold E. Wigren (ed.), Television and Related Media in Teacher Education: Some Exemplary Practices (Baltimore: Multi-State Teacher Education Project, 1967).

[37]W. James Popham, "Instructional Video Tapes in Teacher Education," AV Communication Review, XIV (Fall 1966), 371-375.

grams were tested in a three-group design. One group received audio and video instruction, another group received audio and written instruction and the third group received audio and video presentations that were not relevant to the instructional programs. Each of the four instructional programs included a video-taped post-test which required the subjects to identify whether certain principles were present in each of the instructional situations. These posttests, along with a written test regarding the four instructional principles, were used as criterion measures. The three groups were compared by an analysis of variance. On all four programs, the group that had received videotaped instruction scored significantly higher (at the .01 level) than did the other two groups.

Media in Music Teacher Training

A series of sound-films of a method for teaching general music to a first grade class was developed by Fierbaugh.[38] The effectiveness of the instructional films was evaluated by means of a multiple-choice test, administered on a pretest-posttest schedule, that was designed to measure the subjects' understanding of the

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[38]Harry W. Fierbaugh, "The Development and Evaluation of a Series of Sound Films for Music Teacher Training Education" (unpublished doctoral dissertation, State University of Iowa, 1963).

method. The sample consisted of three groups: (1) thirty elementary education majors who received filmed instruction, (2) thirty elementary education majors who received teacher instruction, and (3) a control group of thirty-two glee club members who did not receive instruction. Using the Sign Test and the Mann-Whitney U Test, scores of each of the experimental groups were compared with control group scores. Not surprisingly, each of the groups receiving instruction scored significantly higher than did the control group. Fierbaugh concluded that the sound-films were an effective means of presenting the concepts and techniques of an approach for teaching general music.

The effectiveness of scund-films has been somewhat offset by the time and expense required for editing and processing. Television, for reasons already stated, is proving to be a more flexible medium for educational use. However, its use in music teacher education is still somewhat restricted.[39] College music departments have used television principally as a public address system in presenting lectures to multiple sections of music appreciation classes.[40]

A review of the literature produced few controlled studies regarding the effectiveness of videotape usage in music teacher education. Most of the conclusions reached

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[39]Thomas H. Carpenter, "TV - More Than a Talking Face," Music Educators Journal, LVII (January, 1971), 61.

[40]Ibid., p. 62.

in various journal articles are but opinion, unsupported by reliable data and therefore unacceptable for generalization. However, some of the articles have descriptive value.

Skapski investigated the feasibility of producing synchronized videotapes as instructional aids in the study of music.[41] Recordings were made of musical performances and later synchronized with musical notations using an author-developed "Nota-Graph" notation system. Favorable evaluations by participants were reported. Although technical problems were encountered, Skapski concluded that production of synchronized videotapes is possible and worthy of further development.

The videotape recorder was used by Daellenbach in a study designed to investigate overt verbal and nonverbal behaviors exhibited by students actively involved in a music performance learning environment.[42] Daellenbach considered nonverbal behaviors to be of particular importance in an investigation of musical learning, having found in a previous study that nonverbal action accounts

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[41]George J. Skapski, Feasibility of Producing Synchronized Videc Tapes as Instructional Aids in the Study of Music, Final Report, USOE Research Project No. 7-I-052 (Northridge, California: San Fernando Valley State College, 1969).

[42]C. Charles Daellenbach, Identification and Classification of Music Learning Behaviors Utilizing Videotape Recording Techniques, Final Report, USOE Project No. 9-B-085 (Rochester: Eastman School of Music, 1970).

for more than fifty per-cent of instructional time.[43]

Regarding the use of the videotape recorder in his analysis of nonverbal behavior, Daellenbach states:

> The use of a videotape recorder as a highly effective tool for recording behavioral data and for detailed analysis of specific teaching behaviors has been justified by this study. Evaluation can be made on a far higher level of sophistication than is possible when traditional procedures are followed. Just as the audiotape recorder proved to be a successful adjunct to verbal behavior investigation, the videotape recorder has now become recognized as a valuable tool for any truly comprehensive study of behavior.[44]

Some videotaping techniques have been adopted in music educational methods courses. Student presentations of lessons are recorded and critiqued. In instrumental methods classes, the "zoom" lens permits close-up viewing of such details as embouchure and hand position.[45] Perhaps the most widespread use of the videotape recorder in the preparation of music teachers has been its use in the conducting class. Commenting upon its effectiveness, Joseph Labuta states:

> The portable video tape recorder (VTR) has proven to be a most useful teaching tool. From bowling alley to micro-teaching laboratory, a VTR provides the immediate feedback that modifies or reinforces the

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[43] Daellenbach, "An Investigation of the Use of Videotape Recorder Techniques in the Identification of Behavioral Characteristics of Music Teachers" (unpublished Master's thesis, Eastman School of Music, 1968).

[44] Daellenbach, Identification and Classification, p. 15.

[45] Allen Cannon, "Video-Tape Improves Teaching," Music Journal. XXVIII (July, 1970), 22.

> behavior of the student more efficiently than any instructor... VTR provides feedback that modifies and reinforces the conducting behavior of each student. While it is no panacea, the results are often startling.[46]

It is noteworthy that videotaping in music teacher education is used primarily to present traditional lectures and to observe the behaviors of prospective teachers. Apparently few, if any, attempts have been made to use videotape as a means of enabling students to participate in realistic learning experiences through simulated classroom encounters.

Attitude as it Relates to Teaching

The relationship between attitude and critical thinking ability was investigated by Bradberry.[47] Bradberry found a positive, significant correlation (.37) between the critical thinking abilities and the attitudes of teacher education students. The Watson-Glasser Critical Thinking Appraisal and the Minnesota Teacher Attitude Inventory were used as measures. Bradberry also found attitude and critical thinking ability to become progressively more favorable and higher from the Freshman to the Senior class level.

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[46] Joseph Labuta, "VTR (Video Tape Recorder)", Instrumentalist, XXV (September, 1970), 87.

[47] Ronald D. Bradberry, "Relationships Among Critical Thinking Ability, Personality Attributes, and Attitudes of Students in a Teacher Education Program" (unpublished doctoral dissertation, North Texas State University, 1968).

McCullough examined the attitudinal differences existing between teachers rated most competent and those rated least competent by their respective school administrators.[48] A teacher attitude inventory was developed and administered to 182 elementary school teachers and twenty-five elementary school administrators. The sample was divided into three groups: (1) administrators, (2) those teachers rated most successful by their administrators, and (3) those teachers rated least successful by their administrators. Test reliability was determined by a Kuder-Richardson formula. The standard score "z" test of significance was used to examine differences between means for the three sample groups. Attitudinal differences existing between teachers rated most successful and teachers rated least successful and between administrators and teachers rated least successful were found to be significant at the .05 level of confidence. No significant attitudinal differences were found between the teachers rated most successful and the school administrators. McCullough concluded from these findings that an attitude inventory can be useful as a predictor of teaching success.

Interest in attitude measurement as a possible predictor of student success appears to be increasing. Christine McGuire states:

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[48] J.L. McCullough, "A Study of Teacher Attitude and Teacher Rating" (unpublished doctoral dissertation, University of Nebraska Teachers College, 1968).

> Because tests of cognitive attributes have yielded such generally disappointing results, there is a growing tendency to incorporate various interest, attitude and personality measures in the admission test batteries of certain professional schools.[49]

Of particular interest to this study is the research reported by Leeds, one of the developers of the Minnesota Teacher Attitude Inventory.[50] Leeds was concerned with the predictive validity of that instrument. Using a longitudinal approach, he correlated MTAI scores obtained at the beginning of teacher training, at college graduation and after one or more years of teaching experience with evaluation ratings for each of 100 subjects. Ratings by the principal, the pupils and a classroom observer were combined to form each evaluation rating. A Pearson product-moment correlation coefficient of .51 was found between MTAI scores obtained after at least one year of teaching experience and the composit rating, indicating the concurrent validity of the MTAI. Of greatest interest from the standpoint of prediction was the correlation of .27 (significant at the .01 level) found between the MTAI scores of beginning teacher trainees and their evaluation ratings after at least one year of teaching experience.

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[49]Christine H. McGuire, "Testing in Professional Education," Review of Educational Research, XXXVIII (February, 1968), 52.

[50]C. H. Leeds, "Predictive Validity of the Minnesota Teacher Attitude Inventory," Journal of Teacher Education, XX (Spring, 1969), 51-56.

A lower correlation of .20 (significant at the .05 level), possibly resulting from the leveling influence of professional training in education, was found between MTAI scores at the time of graduation and the ratings received while teaching. Following an item analysis, the test was shortened and the scoring key modified, resulting in a predictive validity of .55 for beginning teacher trainees and .57 for inexperienced college graduates. Leeds concluded that "as one measure of teacher acceptance of pupils and children, the MTAI performs an important function in the prediction of teaching potential."[51]

Music Teaching and Attitudes

A Musicians Interest Inventory was developed by Kenneth O. Snapp to be used as a counseling aid for college music students.[52] This testing instrument was distributed to 2,780 musicians to explore similarities and differences in interest between specialty groups in music. Four specialty groups were represented in the sample: college level theoretical music teachers, college level applied music teachers, public school music teachers, and symphony musicians. Scales were constructed and Pearson product-moment correlation coefficients were computed. A correlation

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[51] Ibid., p. 55.

[52] Kenneth O. Snapp, "Development of a Musicians Interest Inventory for Use in Vocational and Educational Guidance" (unpublished doctoral dissertation, Indiana University, 1953).

of .76 was found between college theoretical and college applied music teachers; -.88 between college theoretical and public school music teachers; .25 between college theoretical music teachers and symphony musicians; -.82 between college applied and public school music teachers; .13 between college applied music teachers and symphony musicians; and -.49 between public school music teachers and symphony musicians. These findings indicate that interests of college music teachers and symphony musicians are closely related, whereas interests of public school music teachers are strikingly dissimilar to those of the other three groups. Snapp discovered that

> Public school music teaching is the least preferred position among the four specialty groups under consideration. Only 41 per-cent of the public school music teachers themselves rated it their first choice, and just one per-cent of the other three specialty groups preferred it.[53]

A study of music career preferences by Cady produced findings similar to those reported by Snapp.[54] A Survey of Music Career Preferences was developed and administered to 356 music majors at the Ohio State University. Music careers involving either professional performance or direction of high level performance groups received high ratings. Elementary school music teaching

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[53] Ibid., p. 121.

[54] Henry L. Cady, "Survey of Music Career Preferences" (Columbus: The Ohio State University, 1970). (Mimeographed.)

was the least preferred career, even among the students majoring in music education.

Epley, expressing concern over the unfavorable attitudes which many music education students hold regarding the teaching of music, sought to determine the effect that teaching music to small groups of children in elementary and secondary schools would have in developing a positive attitude toward music teaching among sophomore university music students.[55] Using the MTAI to measure attitude toward pupils, the Miller Attitude Scale Toward Teaching to measure attitude toward the teaching profession, and the Cady Survey of Music Career Preferences to measure attitude toward careers in music, an experimental group of thirty and a control group of fifteen were tested on a pretest and posttest schedule. Scores were compared by means of analysis of covariance and the *t* test. Positive changes in attitude toward the teaching profession and toward careers in music were significant at the .05 and at the .01 levels respectively. Changes in attitude toward pupils were not significant. The use of the MTAI, the Cady Survey, and the Pretest-Posttest Control Group Design in Epley's study parallels the use of these instruments and of the design in the current study.

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[55]William C. Epley, "Modifying Attitudes Toward School Music Teaching Through Sophomore Level Experience in Elementary or Secondary Schools" (unpublished doctoral dissertation, Arizona State University, 1971).

Attitude toward the teaching of music is an area of concern to those engaged in the preparation of elementary classroom teachers as well as those who train music specialists. In 1963, the National Education Association Research Division reported that thirty-five per-cent of elementary school music was taught by classroom teachers and that forty per-cent was taught by classroom teachers with the help of music specialists.[56] Yet many prospective elementary teachers do not feel that their training adequately prepares them to teach music.[57]

A study by Smith deals with the attitudes of elementary education majors toward the teaching of music.[58] Smith examined attitude and confidence level changes that occur during a student teaching experience. Sixty-six student teachers served as subjects. The subjects expressed positive changes in confidence for teaching (significant at the .01 level) and in confidence for teaching music (significant at the .05 level), as measured by a confidence level inventory. Negative changes, significant at the .001 level, occured in attitude toward

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[56] Music and Art in the Public Schools, Research Monograph 1963-M3, (Washington, D.C.: Research Division, National Education Association, 1963), p. 15.

[57] Patrick J. Groff, "Self-Estimates of Teaching Ability in Elementary School Subjects," Journal of Teacher Education, XIII (December, 1962), 417-421.

[58] Martha L. Smith, "A Study of Elementary Student Teacher Confidence in and Attitudes Toward Music and Changes that Occur in Student Teaching Experience" (unpublished doctoral dissertation, Michigan State University, 1969).

teaching and children as measured by the MTAI. Interest in music increased, although not significantly, and attitude toward the teaching of music decreased slightly.

Epley notes a lack of research in the area of attitudes as related to the preparation of music teachers.[59] The same conclusion is expressed by Schneider and Cady: "Perhaps the greatest deficiency in research information is the value system of music educators."[60]

Summary

The literature reviewed may be summarized as follows:

1. Skill in handling a variety of occupational problems, including teaching problems, can be gained through simulated experience.
2. Simulation does not require that all aspects of a real situation be present; projected images can be reduced in size and written responses are as effective as enacted responses.
3. Videotape recording has been found to be an effective means of presenting perceivable phenomena in instructional programs.
4. Media, particularly videotape, has received limited use in music teacher education.
5. A relationship exists between attitude, critical thinking ability and teaching competence.
6. Attitude measures can be useful in predicting teaching success.

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[59] Epley, op. cit., p. 33.

[60] Erwin H. Schneider and Henry L. Cady, Evaluation and Synthesis of Research Studies Relating to Music Education (Columbus: The Ohio State University, 1965), p. 249.

7. Many music teachers and prospective music teachers do not place primary value on teaching music as a career.

8. Experience in working with children has resulted in positive changes in attitude toward music teaching on the part of prospective instrumental music teachers.

9. The effects of simulated teaching experience upon the attitudes of prospective instrumental music teachers has not been investigated.

CHAPTER III

PROCEDURE

The present study was developed in three phases: (1) the preparation of videctapes, (2) the experimental workshop and (3) the statistical treatment of data. This chapter describes these three phases, as well as the population, treatment conditions and evaluative instruments.

Preparation of Videctapes

Ten critical teaching situations were selected by means of a questicnnaire[1] sent to all 160 members of the Arizona Band and Orchestra Directors Association. Forty teaching problems were briefly described in the questionnaire. Ten additional spaces were provided for items to be added by the respondents. The respondents were asked to select and tc rank the ten situations which they felt were most critical to the teaching of instrumental music.

Ninety-four of the questionnaires were completed and returned. The ten problems most frequently selected also scored highest in points assigned to the rankings. These ten situations were titled as follows: (1) Motivation, (2) Discipline, (3) Sight Reading Difficulty, (4) Lack of Theoretical Knowledge, (5) Grading, (6) Selection of Literature, (7) Intonation Difficulties, (8) Student

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[1]This questionnaire may be found in Appendix A.

Involvement, (9) Rhythmic Inaccuracy and (10) Scheduling Music Classes. Nine of the ten items were selected from the list of forty problems. The problem of scheduling was among the items added to the list by the teachers.

Video taping sessions were held at East High School and Griffeth Elementary School in Phoenix, Arizona and at Mesa Junior High School in Mesa, Arizona. An Ampex VR-5100 video tape recorder and a Telemation TMC-2100V video camera equipped with a zoom lens were used. The camera was positioned to capture the teacher's view of each situation. Approximately four hours of material was recorded, covering all of the ten critical teaching situations.

A rough script of each of the problem sequences was prepared prior to actual taping. The scripts were then reviewed by the instrumental music teachers whose classes were to be taped. The teachers assisted in the selection of students for key roles and in modifying the scripts as required to enable the children to enact each problem situation most naturally.

The students were informed of the situations that were to be portrayed and provided with general instructions as to how each situation should be "acted out." They were not required to memorize lines. Instead, they were asked to speak the intended message in their own words. Since they were well cast, the actual taping was accomplished with little difficulty.

To create ten videotaped sequences for final viewing, selections from the original tapes were dubbed on to a master tape using an Ampex VR-5100, an Ampex VR-5100E and a video processor. Words spoken by the "teacher" were added by means of a character generator. Cards were used for titles. The presentations varied in length from one to ten minutes. Selection determination of the order of the problem situations was made on a random basis.

The completed tapes were presented to a music research methods class at Michigan State University. Titles were blocked cut and members of the class were asked to title each of the ten situations. A multiple-choice questionnaire was then constructed, based on the titles suggested by the class.

The questionnaire was administered to an instrumental music class comprised of twenty in-service music teachers and twenty-one music education students without teaching experience. The series of videotapes was shown with the titles still blocked out. Each class member responded by selecting the title that he considered appropriate. Chi-square analysis revealed no significant difference between the responses of the experienced teachers and those of the prospective teachers. However, two of the titles were not selected as most appropriate by the class. Members of the class expressed the opinion that the videotapes were authentic portrayals of the situations described but that the two titles were not

sufficiently inclusive. Accordingly, the two situations were retitled. "Grading" was changed to "Evaluation" and "Student Involvement" was retitled "Rehearsal Procedures."

For final authentication, the tapes were presented to six Arizona music educators ranging in experience from one to seventeen years.[2] Again the titles were blocked out and the jury members were asked to select the most appropriate titles. All of the videotaped situations were unanimously accepted as accurate portrayals of situations likely to be faced by an instrumental music teacher. With but one exception, the correct titles were selected as being most appropriate.

Population

The population of this study consisted of all of the undergraduate instrumental music education majors at Arizona State University for the Fall Semester 1971. An instrumental music education major was described as a music student seeking a baccalaureate degree with a certificate to teach public school instrumental music in the State of Arizona. The population total was approximately one hundred.

The population sample consisted of the fifty-seven students who completed the pretest and one or both of the posttests. Scheduling difficulties at the times tests

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[2]The form used to determine authenticity may be found in Appendix B.

were administered were the major cause for the lack of participation in the project by the other music education students. The sample, therefore, was assumed to be representative of the population and not biased by the selection technique.

Instruments

Two attitude measurement instruments were deemed necessary for this study: one measuring attitude toward teaching and pupils and one concerned with attitude toward various careers within music.

Minnesota Teacher Attitude Inventory[3]

The Minnesota Teacher Attitude Inventory (MTAI) was selected to measure attitude toward teaching and pupils. The authors claim research indicates that

> Attitudes of teachers toward children and school work can be measured with a high reliability, and that they are significantly correlated with the teacher-pupil relations found in the teacher's classrooms. The MTAI has emerged from these researches. It is designed to measure those attitudes of a teacher which predict how well he will get along with pupils in interpersonal relationships, and indirectly how well satisfied he will be with teaching as a vocation.[4]

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[3]Walter W. Cook, Carroll H. Leeds and Robert Callis, Minnesota Teacher Attitude Inventory (New York: The Psychological Corporation, 1951).

[4]Ibid., p. 3.

According to Getzels and Jackson, the MTAI is the most popular instrument for the measurement of teacher attitudes.[5] Smith notes that the MTAI is common to studies of attitude change in student teachers.[6] However, Leeds contends that the instrument has often been misused:

> Contributing to further questioning of the validity of the instrument and to the equivocal results concerning it found in the literature has been its unwarranted use with student teachers and teachers without experience. Constructed on the basis of experienced teachers' responses to the items, the MTAI should be confined in its use to experienced teachers, if the present scoring key is employed.[7]
>
> The feasibility of using the present scoring key for predictive purposes with entrants into teacher training, student teachers, or even graduates without experience is highly questionable.[8]

In order to obtain higher predictive validity coefficients for teacher trainees, Leeds constructed modified scoring keys based on item response patterns of beginning teacher trainees and inexperienced college graduates.[9]

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[5] J. W. Getzels and P. W. Jackson, "The Teacher's Personality and Characteristics," Handbook of Research on Teaching, ed. N. L. Gage (Chicago: Rand McNally and Co., 1965), p. 508.

[6] Martha L. Smith, "A Study of Elementary Student Teacher Confidence In and Attitude Toward Music and Changes that Occur in a Student Teaching Experience," (unpublished doctoral dissertation, Michigan State University, 1969), p. 50.

[7] Carroll H. Leeds, "Predictive Validity of the Minnesota Teacher Attitude Inventory," Journal of Teacher Education, XX, No. 1 (Spring, 1969), 51.

[8] Ibid., p. 54.

[9] See pp. 33-34.

> Use of the modified keys can be recommended when the MTAI is used for predictive purposes before completion of training and acquisition of experience. Item response patterns at the three levels differ sufficiently to warrant use of the different keys.[10]

Because all of the subjects of the present study lacked teaching experience, the published scoring key and both of Leeds' modified keys were used with the MTAI.

Survey of Music Career Preferences[11]

The unpublished Survey of Music Career Preferences (Cady Survey) by Henry Cady was used to measure attitude toward various careers within music. A review of reference works by Shaw and Wright,[12] Buros,[13] Whybrew[14] and Lehman[15] led to the conclusion that no standard published instrument exists which fulfills the specific needs of this study.

The Cady Survey is designed to report the career preferences of music students by means of paired comparisons.

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[10]Leeds, op. cit., p. 55.

[11]Henry L. Cady, "Survey of Music Career Preferences" (Columbus: The Ohio State University, 1970). (Mimeographed.)

[12]Marvin E. Shaw and Jack M. Wright, Scales for the Measurement of Attitudes (New York: McGraw-Hill Book Company, 1967).

[13]Oscar K. Buros (ed.), The Sixth Mental Measurements Yearbook (Highland Park: The Gryphon Press, 1965).

[14]William Whybrew, Measurement and Evaluation in Music (Dubuque: Wm. C. Brown Company, 1962).

[15]Paul R. Lehman, Tests and Measurements in Music (Englewood Cliffs: Prentice-Hall, Inc., 1968).

The survey consists of two parts. In Part I, selections are made from a list of ten music teaching careers. Part II combines music teaching careers with a variety of other careers in music.[16]

> In ranking such lists according to one's preferences, that is, from most preferred to least preferred, one may find it difficult to choose between some items. Too, he may find it difficult to avoid momentary feelings about a career which will affect all of his other choices, the "halo" effect. In order to minimize these difficulties, a technique has been developed which is called the paired comparisons. In this method, each item in a list is paired with every other item in the list so that a respondent chooses between each career and all other responses.[17]

The Cady Survey is designed to report student career preferences, not to value occupational selections. For this reason, a method of scoring had to be devised. In this study, all music occupations involving public school music teaching were considered positive responses. Each score consisted of the total number of positive responses.

Design

The basic research design of this study was the pretest-posttest control group design as described by

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[16]These career lists may be found in Appendix C.

[17]Cady, op.cit., p. 1.

Campbell and Stanley.[18] The paradigm for this design is

R O X O

R O O

The Solomon four-group design was also considered, but was rejected due to the limited number of participants.

In experiments involving attitudes, Campbell and Stanley recommend repeated posttests. They also warn against relying on an immediate posttest or measure at any single point in time for the evaluation of a teaching method.[19] Following their recommendation, the design of this experiment was modified to include a second posttest administered one month after the experimental treatment.

One of the features of the pretest-posttest control group design is that it provides for the control of all eight of the factors jeopardizing internal validity.[20] But there is no way to determine the extent to which sources of external invalidity may have affected the experiment. The pretest may have interacted with the treatment. The novelty of a workshop may have had an effect upon the treatment. The students at Arizona State University may not be typical of instrumental music education students. Lack of interest may have accounted

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[18]Donald T. Campbell and Julian C. Stanley, Experimental and Quasi-Experimental Designs for Research (Chicago: Rand McNally and Company, 1963), p. 13.

[19]Ibid., p. 31.

[20]Ibid., p. 8.

for the failure on the part of some of the students to participate in the experiment. Although none of these factors jeopardize the random equivalence of the treatment and control groups, they are likely to affect the representativeness of the sample and any generalizations that may be drawn from the experiment. Therefore, the results of the study should be generalized only to students and schools similar to those involved in the present study.

Testing Procedure

Three tests were administered: a pretest, a posttest immediately after the experiment and a posttest one month after the experiment. All of the tests were administered in the same room by the same person at the same time of day. The time selected follows the orchestra rehearsal period and immediately preceeds the band rehearsal period. No regular music classes are scheduled at that time; the hour is reserved for special meetings and ensembles that do not meet on a regular basis. A large lecture hall adjacent to the band/orchestra rehearsal room was used for testing, since nearly all of the instrumental music majors are members of either the orchestra or the band. Each testing session was announced in all of the music education classes and in band and orchestra rehearsals as a "special meeting for all instrumental

music education majors."

Random assignment to groups was made by means of cards at the time of the pretest. Upon entering the room each student was given a card and asked to fill in his name, class level and whether or not he was engaged in student teaching. Because the experiment was held during the Fall Semester, none of the students had completed their student teaching assignments. While the students were taking the pretest, the cards were divided into five groups: (1) Seniors engaged in student teaching, (2) Seniors not engaged in student teaching, (3) Juniors, (4) Sophomores and (5) Freshmen. Students in each of the five groups were then randomly assigned to either the experimental or control group on a 2:1 ratio. Announcement of assignments was made at the conclusion of the pretest.

Experimental Workshop

The experimental treatment consisted of a two-day workshop. Two sessions were held on each of the two days. Two problem situations were presented during the first session, three during the second session, three during the third session and two during the fourth session. Four viewing stations were set up, each under the supervision of an experienced music teacher. In addition, two music education professors, Dr. William English of Arizona State University and Dr. Robert Sidnell of Michigan State

University, served as consultants.

Students from each class level were randomly assigned to four groups. Each group spent one session at each of the viewing stations. The groups viewed each episode and the students responded by writing down what they would do or say. Then the incident was viewed a second time, followed by a discussion of possible causes and solutions for the problem. Many varied and divergent ideas were presented regarding potential ways to handle problems, particularly those problems involving classroom management.

All of the students who participated in the first two sessions returned for the second day of the workshop. The students were generally enthusiastic and several expressed the desire that similar videotaped presentations be included in their regular course of study.

Treatment of Data

Tests were scored by the Arizona State University Testing Service. The scores were then transferred to cards by key punching, visually verified and arranged in accordance with the appropriate statistical programs. Computer processing was done on a GE 425 in the Arizona State University Computer Center.

The statistical analysis consisted of the factorial analysis of covariance and the *t* test. The two-way

analysis of covariance was used to determine the significance of differences between the experimental and control groups, of differences between class levels and of the interaction between these two factors. The analysis of covariance adjusts for original differences in the tested individuals and is the statistical treatment recommended by Campbell and Stanley for the experimental design used in this study.[21]

Freshmen and sophomores were grouped together for analysis. The scheduling conflict that prohibited some of the students from participating in the experiment applied primarily to underclassmen and would have caused the groups to be small, thereby lessening the possibility of significant findings. It was felt that combining the two class levels would have little effect on the results of the study, since the freshman and sophomore curricula at Arizona State University are essentially the same and differ considerably from the junior and senior curricula.

Significant changes from pretest to posttest for each of the subgroups were ascertained by *t* tests. Both the F ratios and the *t* test statistics resulting from the analysis of covariance and the *t* tests were tested for significance at the .05 and .01 levels.

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[21] *Ibid.*

CHAPTER IV

RESULTS

Results of the study are presented in the form of tables. A raw data table which presents pretest and post-test scores along with the class level and student teaching experience of each student may be found in Appendix D.

The three scoring keys used with the MTAI are designated as follows: MTAI Key A refers to the original scoring key for experienced teachers, MTAI Key B refers to the modified scoring key recommended for inexperienced college graduates and MTAI Key C refers to the modified scoring key recommended for beginning teacher trainees.

Report of Descriptive Data

Computed means and standard deviations for each of the criteria are presented in Tables 1 - 8.

TABLE 1

Means and Standard Deviations - MTAI Key A

Test I (Pretest - First Posttest)

Cell	Mean Pretest	Mean Posttest	S.D. Pretest	S.D. Posttest
Experimental Group	37.11	41.75	26.39	26.62
Control Group	38.95	37.11	27.17	27.86
Seniors	29.93	38.87	32.01	28.79
Juniors	47.86	42.73	20.23	22.64
Freshmen/Sophomores	31.89	38.06	25.42	31.09
Exper. Grp. Seniors	29.70	42.50	34.27	27.75
Exper. Grp. Juniors	42.64	38.50	19.66	22.14
Exper. Grp. Fr./Soph.	36.83	44.92	26.64	31.94
Control Grp. Seniors	30.40	31.60	30.73	32.70
Control Grp. Juniors	57.00	50.12	18.97	23.01
Control Grp. Fr./Soph.	22.00	24.33	21.44	26.49

TABLE 2

Means and Standard Deviations - MTAI Key B

Test I (Pretest - First Posttest)

Cell	Mean Pretest	Mean Posttest	S.D. Pretest	S.D. Posttest
Experimental Group	27.11	30.58	14.46	14.89
Control Group	25.37	25.58	18.16	18.90
Seniors	23.53	25.20	15.14	12.84
Juniors	31.91	30.91	10.91	11.43
Freshmen/Sophomores	22.39	29.39	19.56	23.20
Exper. Grp. Seniors	26.30	28.60	14.45	11.47
Exper. Grp. Juniors	30.21	28.50	11.02	11.56
Exper. Grp. Fr./Soph.	24.17	34.67	18.11	20.31
Control Grp. Seniors	18.00	18.40	16.57	13.94
Control Grp. Juniors	34.87	35.12	10.76	10.56
Control Grp. Fr./Soph.	18.83	18.83	23.57	26.87

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TABLE 3

Means and Standard Deviations - MTAI Key C

Test I (Pretest - First Posttest)

Cell	Mean Pretest	Mean Posttest	S.D. Pretest	S.D. Posttest
Experimental Group	15.83	20.44	9.88	10.84
Control Group	17.21	17.26	13.31	13.07
Seniors	14.80	16.87	12.31	12.45
Juniors	20.64	19.59	9.02	9.76
Freshmen/Sophomores	12.28	21.11	11.02	13.27
Exper. Grp. Seniors	16.80	20.80	12.59	11.52
Exper. Grp. Juniors	16.86	17.00	8.14	9.80
Exper. Grp. Fr./Soph.	13.83	24.17	9.79	11.03
Control Grp. Seniors	10.80	9.00	11.97	11.34
Control Grp. Juniors	27.25	24.12	6.50	8.39
Control Grp. Fr./Soph.	9.17	15.00	13.59	13.24

TABLE 4

Means and Standard Deviations - Cady

Test I (Pretest - First Posttest)

Cell	Mean Pretest	Mean Posttest	S.D. Pretest	S.D. Posttest
Experimental Group	36.78	38.42	7.06	7.37
Control Group	33.53	33.42	9.49	9.28
Seniors	37.47	38.20	6.64	7.75
Juniors	37.14	37.95	6.78	6.13
Freshmen/Sophomores	32.33	33.89	9.77	10.63
Exper. Grp. Seniors	38.90	40.50	5.51	6.28
Exper. Grp. Juniors	36.57	37.93	6.66	6.09
Exper. Grp. Fr./Soph.	35.25	37.25	8.65	9.54
Control Grp. Seniors	34.60	33.60	8.41	9.04
Control Grp. Juniors	38.12	38.00	7.32	6.61
Control Grp. Fr./Soph.	26.50	27.17	9.93	10.15

TABLE 5

Means and Standard Deviations - MTAI Key A

Test II (Pretest - Second Posttest)

Cell	Mean Pretest	Mean Posttest	S.D. Pretest	S.D. Posttest
Experimental Group	30.81	28.27	25.98	27.53
Control Group	36.37	35.75	26.50	23.71
Seniors	22.40	19.00	32.43	30.04
Juniors	45.39	45.06	21.37	17.48
Freshmen/Sophomores	24.43	21.86	20.72	25.49
Exper. Grp. Seniors	14.67	9.50	31.78	25.57
Exper. Grp. Juniors	41.58	43.08	22.24	20.27
Exper. Grp. Fr./Soph.	26.75	20.12	21.70	28.98
Control Grp. Seniors	34.00	33.25	34.24	34.15
Control Grp. Juniors	53.00	49.00	18.95	10.35
Control Grp. Fr./Soph.	21.33	24.17	20.90	22.43

TABLE 6

Means and Standard Deviations - MTAI Key B

Test II (Pretest - Second Posttest)

Cell	Mean Pretest	Mean Posttest	S.D. Pretest	S.D. Posttest
Experimental Group	22.35	26.81	13.28	14.48
Control Group	22.56	23.75	18.18	21.06
Seniors	19.50	16.80	14.29	15.55
Juniors	29.56	35.17	11.92	11.51
Freshmen/Sophomores	15.36	19.71	16.19	18.92
Exper. Grp. Seniors	20.17	18.00	12.16	15.74
Exper. Grp. Juniors	28.08	33.50	12.30	11.69
Exper. Grp. Fr./Soph.	15.37	23.37	13.06	14.16
Control Grp. Seniors	18.50	15.00	19.09	17.49
Control Grp. Juniors	32.50	38.50	11.62	11.40
Control Grp. Fr./Soph.	15.33	14.83	21.05	24.49

TABLE 7

Means and Standard Deviations - MTAI Key C

Test II (Pretest - Second Posttest)

Cell	Mean Pretest	Mean Posttest	S.D. Pretest	S.D. Posttest
Experimental Group	12.46	16.85	8.45	10.95
Control Group	16.19	18.31	13.36	12.94
Seniors	10.60	9.50	10.13	11.17
Juniors	18.56	24.44	9.17	8.71
Freshmen/Sophomores	10.21	14.00	10.96	10.53
Exper. Grp. Seniors	10.00	9.17	8.44	11.86
Exper. Grp. Juniors	14.92	22.08	8.03	9.12
Exper. Grp. Fr./Soph.	10.62	14.75	9.15	9.74
Control Grp. Seniors	11.50	10.00	13.70	11.80
Control Grp. Juniors	25.83	29.17	6.97	5.91
Control Grp. Fr./Soph.	9.67	13.00	13.94	12.39

TABLE 8

Means and Standard Deviations - Cady

Test II (Pretest - Second Posttest)

Cell	Mean Pretest	Mean Posttest	S.D. Pretest	S.D. Posttest
Experimental Group	36.88	38.19	7.33	7.59
Control Group	33.69	33.87	10.18	10.50
Seniors	37.60	37.20	7.82	9.46
Juniors	37.11	38.06	6.91	6.62
Freshmen/Sophomores	32.43	34.14	10.43	11.11
Exper. Grp. Seniors	39.50	39.67	6.53	8.78
Exper. Grp. Juniors	36.92	37.75	7.22	7.11
Exper. Grp. Fr./Soph.	34.87	37.75	8.32	8.31
Control Grp. Seniors	34.75	33.50	9.71	10.47
Control Grp. Juniors	37.50	38.67	6.89	6.09
Control Grp. Fr./Soph.	29.17	29.33	12.80	13.25

In the first test, the treatment group posttest scores showed an increase over the pretest scores in all measures. The control group evidenced a slight increase in the MTAI when scoring keys B and C were used, and a decrease in the Cady and in the MTAI when used with scoring key A. Scores of seniors, sophomores and freshmen increased in all measures. Junior level students registered an increase in the Cady and a decrease in all forms of the MTAI. MTAI pretest scores of juniors were notably higher than those of the other students.

In the second test, the posttest scores of both the experimental and control groups showed an increase over the pretest scores in the Cady and in the MTAI when scoring keys B and C were used. Both groups registered a decrease when Key A was used in scoring the MTAI. Scores of senior students decreased in all measures. Junior, sophomore and freshman scores increased in the Cady and in the MTAI when scoring keys B and C were used, but decreased when the original scoring key was used. MTAI pretest and posttest scores of juniors were considerably higher than those of the other students.

Results of Analysis of Covariance

Results of the analysis of covariance measuring pretest to posttest change are presented in Tables 9 - 16. The covariates utilized were the pretest scores.

The experimental/control group factor is designated as Factor A. Factor B refers to the class level factor.

TABLE 9

Value of F - MTAI Key A

Test I (Pretest - First Posttest)

Source	Sums of Squares	df	Mean Squares	F ratio	Prob.
Factor A	538.984	1	538.984	2.438	0.121
Factor B	867.518	2	433.759	1.962	0.150
Interaction	214.758	2	107.379	0.486	0.624
Error	10611.513	48	221.073		

TABLE 10

Value of F - MTAI Key B

Test I (Pretest - First Posttest)

Source	Sums of Squares	df	Mean Squares	F ratio	Prob.
Factor A	172.113	1	172.113	2.557	0.113
Factor B	198.315	2	99.158	1.473	0.238
Interaction	369.011	2	184.506	2.741	0.073
Error	3230.698	48	67.306		

TABLE 11

Value of F - MTAI Key C

Test I (Pretest - First Posttest)

Source	Sums of Squares	df	Mean Squares	F ratio	Prob.
Factor A	248.138	1	248.138	4.931	0.029
Factor B	528.269	2	264.134	5.248	0.009
Interaction	47.738	2	23.869	0.474	0.631
Error	2415.648	48	50.326		

TABLE 12

Value of F - Cady

Test I (Pretest - First Posttest)

Source	Sums of Squares	df	Mean Squares	F ratio	Prob.
Factor A	48.805	1	48.805	4.307	0.041
Factor B	2.891	2	1.446	0.128	0.880
Interaction	4.726	2	2.363	0.209	0.814
Error	543.922	48	11.332		

TABLE 13

Value of F - MTAI Key A

Test II (Pretest - Second Posttest)

Source	Sums of Squares	df	Mean Squares	F ratio	Prob.
Factor A	211.794	1	211.794	0.933	0.658
Factor B	319.458	2	159.729	0.704	0.506
Interaction	270.639	2	135.319	0.596	0.561
Error	7941.461	35	226.899		

TABLE 14

Value of F - MTAI Key B

Test II (Pretest - Second Posttest)

Source	Sums of Squares	df	Mean Squares	F ratio	Prob.
Factor A	81.357	1	81.357	0.868	0.640
Factor B	616.370	2	308.185	3.289	0.048
Interaction	157.609	2	78.804	0.841	0.557
Error	3279.721	35	93.706		

TABLE 15

Value of F - MTAI Key C

Test II (Pretest - Second Posttest)

Source	Sums of Squares	df	Mean Squares	F ratio	Prob.
Factor A	0.330	1	0.330	0.005	0.944
Factor B	577.645	2	288.823	4.116	0.024
Interaction	5.147	2	2.573	0.037	0.964
Error	2455.875	35	70.168		

TABLE 16

Value of F - Cady

Test II (Pretest - Second Posttest)

Source	Sums of Squares	df	Mean Squares	F ratio	Prob.
Factor A	19.878	1	19.878	1.283	0.264
Factor B	21.945	2	10.973	0.708	0.504
Interaction	18.558	2	9.279	0.599	0.560
Error	542.232	35	15.492		

The A Factor F-ratios of 4.931 of Table 11 and 4.307 of Table 12 were significant at the .05 level. On both of these measures, all three class levels in the experimental group registered a mean score gain. None of the other F-ratios were significant for Factor A. The error in each test was large, lessening the possibility of significance. This error relates to the larger post-test standard deviation in all measures for the experimental group, suggesting that treatment may have created a larger range of scores.

Significant F-ratios were found in Tables 11, 14 and 15 for Factor B. These findings may be due largely to the high pretest scores of juniors in the control group.

Interaction was not significant in any of the tests.

Results of t Tests

Results of the t tests measuring pretest to post-test change by the control group are presented in Tables 17 and 18.

TABLE 17

Value of t - Control Group

Test I (Pretest - First Posttest)

Test	Mean Score	Mean Difference	df	t value
MTAI Key A Pretest MTAI Key A Posttest	38.947 37.105	-1.842	18	-.623
MTAI Key B Pretest MTAI Key B Posttest	25.368 25.579	0.211	18	0.180
MTAI Key C Pretest MTAI Key C Posttest	17.211 17.263	0.053	18	0.034
Cady Pretest Cady Posttest	33.526 33.421	-.105	18	-.236

levels of significance[1]

P .05 = 2.101 P .01 = 2.878

[1] J. P. Guilford, Fundamental Statistics in Psychology and Education (New York: McGraw-Hill Book Company, 1965), pp. 580-581.

TABLE 18

Value of t - Control Group

Test II (Pretest - Second Posttest)

Test	Mean Score	Mean Difference	df	t value
MTAI Key A Pretest MTAI Key A Posttest	36.375 35.750	-.625	15	-.223
MTAI Key B Pretest MTAI Key B Posttest	22.562 23.750	1.187	15	0.523
MTAI Key C Pretest MTAI Key C Posttest	16.187 18.312	2.125	15	1.093
Cady Pretest Cady Posttest	33.687 33.875	0.187	15	0.282

levels of significance

P .05 = 2.131 P .01 = 2.947

None of the t values were significant. The mean scores of the control group were very stable, particularly in the first test.

The t test for significance was applied to pretest and posttest scores of treatment subjects as grouped by the independent variables of class level and student teaching experience.

Results of the t tests measuring pretest to post-test change of seniors are presented in Tables 19 and 20.

TABLE 19

Value of t - Seniors

Test I (Pretest - First Posttest)

Test	Mean Score	Mean Difference	df	t value
MTAI Key A Pretest MTAI Key A Posttest	29.700 42.500	12.800	9	2.262*
MTAI Key B Pretest MTAI Key B Posttest	26.300 28.600	2.300	9	0.942
MTAI Key C Pretest MTAI Key C Posttest	16.800 20.800	4.000	9	1.522
Cady Pretest Cady Posttest	38.900 40.500	1.600	9	1.281

levels of significance

*P .05 = 2.262 P .01 = 3.250

TABLE 20

Value of t - Seniors

Test II (Pretest - Second Posttest)

Test	Mean Score	Mean Difference	df	t value
MTAI Key A Pretest MTAI Key A Posttest	14.667 9.500	-5.167	5	-.517
MTAI Key B Pretest MTAI Key B Posttest	20.167 18.000	-2.167	5	-.454
MTAI Key C Pretest MTAI Key C Posttest	10.000 9.167	-.833	5	-.194
Cady Pretest Cady Posttest	39.500 39.667	0.167	5	0.106

levels of significance

P .05 = 2.571 P .01 = 4.032

The t value of the MTAI was significant at the .05 confidence level for the first test when the published scoring key was used. The t value for the Cady measurement was not significant.

None of the second test t values were significant.

Results of t tests measuring pretest to posttest change of juniors are presented in Tables 21 and 22.

TABLE 21

Value of t - Juniors

Test I (Pretest - First Posttest)

Test	Mean Score	Mean Difference	df	t value
MTAI Key A Pretest MTAI Key A Posttest	42.643 38.500	-4.143	13	-.962
MTAI Key B Pretest MTAI Key B Posttest	30.214 28.500	-1.714	13	-.587
MTAI Key C Pretest MTAI Key C Posttest	16.857 17.000	0.143	13	0.059
Cady Pretest Cady Posttest	36.571 37.929	1.357	13	1.304

levels of significance

P .05 = 2.160 P .01 = 3.012

TABLE 22

Value of t - Juniors

Test II (Pretest - Second Posttest)

Test	Mean Score	Mean Difference	df	t value
MTAI Key A Pretest MTAI Key A Posttest	41.583 43.083	1.500	11	0.318
MTAI Key B Pretest MTAI Key B Posttest	28.083 33.500	5.417	11	1.940
MTAI Key C Pretest MTAI Key C Posttest	14.917 22.083	7.167	11	2.435*
Cady Pretest Cady Posttest	36.917 37.750	0.833	11	0.503

levels of significance

*P .05 = 2.201 P .01 = 3.106

No significant changes were found on the first test.

On the second test, the MTAI t value was significant at the .05 level when scoring key C was used.

Results of t tests measuring pretest to posttest change of freshmen and sophomores are presented in Tables 23 and 24.

TABLE 23

Value of t - Freshmen & Sophomores

Test I (Pretest - First Posttest)

Test	Mean Score	Mean Difference	df	t value
MTAI Key A Pretest MTAI Key A Posttest	36.833 44.917	8.083	11	2.025
MTAI Key B Pretest MTAI Key B Posttest	24.167 34.667	10.500	11	4.252*
MTAI Key C Pretest MTAI Key C Posttest	13.833 24.167	10.333	11	6.916*
Cady Pretest Cady Posttest	35.250 37.500	2.250	11	2.199

levels of significance

P .05 = 2.201 *P .01 = 3.106

TABLE 24

Value of t - Freshmen & Sophomores

Test II (Pretest - Second Posttest)

Test	Mean Score	Mean Difference	df	t value
MTAI Key A Pretest MTAI Key A Posttest	26.750 20.125	-6.625	7	-1.279
MTAI Key B Pretest MTAI Key B Posttest	15.375 23.375	8.000	7	2.180
MTAI Key C Pretest MTAI Key C Posttest	10.625 14.750	4.125	7	1.377
Cady Pretest Cady Posttest	34.875 37.750	2.875	7	4.314*

levels of significance

P .05 = 2.365 *P .01 = 3.499

The t value of the MTAI was significant at the .01 confidence level for the first test when either Key B or Key C was used. The Cady was not significant.

On the second test the MTAI was not significant. The Cady was significant at the .01 level.

Freshmen and sophomores seemed to be more sensitive to treatment change than upperclassmen.

Results of t tests measuring pretest to posttest change of students without student teaching experience are presented in Tables 25 and 26.

TABLE 25

Value of t - Students Without Student Teaching Experience

Test I (Pretest - First Posttest)

Test	Mean Score	Mean Difference	df	t value
MTAI Key A Pretest MTAI Key A Posttest	40.594 43.719	3.125	31	1.076
MTAI Key B Pretest MTAI Key B Posttest	28.719 31.781	3.062	31	1.581
MTAI Key C Pretest MTAI Key C Posttest	16.844 21.031	4.187	31	2.687*
Cady Pretest Cady Posttest	36.562 38.594	2.031	31	3.227**

levels of significance

*P .05 = 2.042 **P .01 = 2.750

TABLE 26

Value of t - Students Without Student Teaching Experience

Test II (Pretest - Second Posttest)

Test	Mean Score	Mean Difference	df	t value
MTAI Key A Pretest MTAI Key A Posttest	35.435 33.130	-2.304	22	-.747
MTAI Key B Pretest MTAI Key B Posttest	23.783 28.870	5.087	22	2.312*
MTAI Key C Pretest MTAI Key C Posttest	13.565 19.000	5.435	22	2.795*
Cady Pretest Cady Posttest	36.913 38.261	1.348	22	1.394

levels of significance

*P .05 = 2.074 P .01 = 2.819

On the first test, the MTAI was significant at the .05 level when Key C was used. The Cady was significant at the .01 level.

On the second test, the MTAI was significant at the .05 level when either Key B or Key C was used. The Cady was not significant.

Results of t tests measuring pretest to posttest change of student teachers are presented in Tables 27 and 28.

TABLE 27

Value of t - Student Teachers

Test I (Pretest - First Posttest)

Test	Mean Score	Mean Difference	df	t value
MTAI Key A Pretest MTAI Key A Posttest	9.250 26.000	16.750	3	1.662
MTAI Key B Pretest MTAI Key B Posttest	14.250 21.000	6.750	3	2.285
MTAI Key C Pretest MTAI Key C Posttest	7.750 15.750	8.000	3	1.931
Cady Pretest Cady Posttest	38.500 37.750	-.750	3	- -.333

levels of significance

P .05 = 3.182 P .01 = 5.841

TABLE 28

Value of *t* - Student Teachers

Test II (Pretest - Second Posttest)

Test	Mean Score	Mean Difference	df	*t* value
MTAI Key A Pretest	-4.667	-4.333	2	-.195
MTAI Key A Posttest	-9.000			
MTAI Key B Pretest	11.333	-.333	2	-.046
MTAI Key B Posttest	11.000			
MTAI Key C Pretest	4.000	-3.667	2	-.500
MTAI Key C Posttest	0.333			
Cady Pretest	36.667	1.000	2	0.577
Cady Posttest	37.667			

levels of significance

P .05 = 4.303 P .01 = 9.925

No *t* values were significant. The small sample size was probably a factor in these findings, particularly in the first test.

The Pearson product-moment correlation was computed to determine the amount of relationship which existed between the attitude evaluation instruments used in this study. The pretest results are presented in Tables 29 and 30.

TABLE 29

Pretest Correlation Coefficients

Test I (Pretest - First Posttest)

	MTAI Key A	MTAI Key B	MTAI Key C	Cady
MTAI Key A	1.0000	0.8256**	0.8462**	0.3288
MTAI Key B	0.8256**	1.0000	0.8324**	0.4181*
MTAI Key C	0.8462**	0.8324**	1.0000	0.2823
Cady	0.3288	0.4181*	0.2823	1.0000

4 Variables
55 Subjects

levels of significance[4]

*.05 = .379 **.01 = .449

[4] Ibid.

TABLE 30

Pretest Correlation Coefficients

Test II (Pretest - Second Posttest)

	MTAI Key A	MTAI Key B	MTAI Key C	Cady
MTAIKey A	1.0000	0.8270*	0.8503*	0.3895
MTAI Key B	0.8270*	1.0000	0.8101*	0.5308*
MTAI Key C	0.8503*	0.8101*	1.0000	0.3710
Cady	0.3895	0.5308*	0.3710	1.0000

4 Variables
42 Subjects

levels of significance

.05 = .419 *.01 = .494

Pretest correlation of the MTAI using scoring key B and the Cady Survey was significant at the .05 level for subjects of the first test and at the .01 level for subjects of the second test. Correlations between keys A and C and the Cady were only significant at the .10 level.

Correlations between the three MTAI keys were highly significant.

The posttest correlation coefficients are presented in Tables 31 and 32.

TABLE 31

Posttest Correlation Coefficients

Test I (Pretest - First Posttest)

	MTAI Key A	MTAI Key B	MTAI Key C	Cady
MTAI Key A	1.0000	0.8045**	0.8409**	0.2692
MTAI Key B	0.8045**	1.0000	0.7899**	0.4236*
MTAI Key C	0.8409**	0.7899**	1.0000	0.3279
Cady	0.2692	0.4236*	0.3279	1.0000

4 Variables
55 Subjects

levels of significance

*.05 = .379 **.01 = .449

TABLE 32

Posttest Correlation Coefficients

Test II (Pretest - Second Posttest)

	MTAI Key A	MTAI Key B	MTAI Key C	Cady
MTAI Key A	1.0000	0.8454*	0.8652*	0.3685
MTAI Key B	0.8454*	1.0000	0.8268*	0.5085*
MTAI Key C	0.8652*	0.8268*	1.0000	0.3271
Cady	0.3685	0.5085*	0.3271	1.0000

4 Variables
42 Subjects

levels of significance

.05 = .419 *.01 = .494

The posttest instrument correlations were similar to those of the pretest. No changes in the significance levels of any of the correlations were noted.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

In this chapter, each of the twenty-eight hypotheses of the study are considered, conclusions are offered and finally recommendations are discussed.

Treatment of Hypotheses

Determination of the significance of attitude changes measured by the MTAI was made according to the results obtained by using scoring key C. Key C, designed for use with beginning teacher trainees, was judged to be the most sensitive to the changes of the subjects of this study.

Hypotheses one and two were rejected or retained on the basis of the analysis of covariance.

> $H_0 1$: There is no significant difference immediately after the experimental treatment between the attitudes toward pupils of university students who have had simulated encounters with instrumental music teaching problems and the attitudes of students who did not have this experience, as measured by the MTAI.

The first hypothesis was rejected at the .05 confidence level.

H_02: There is no significant difference thirty days after the experimental treatment between the attitudes toward pupils of university students who have had simulated encounters with instrumental music teaching problems and the attitudes of students who did not have this experience, as measured by the MTAI.

Hypothesis two was retained. Either the changes in attitude were temporary changes or differences between the two groups were offset by other occurances within the thirty day period. The significant difference found between class levels suggests the latter.

Hypotheses three and four were rejected or retained on the basis of t tests.

H_03: There is no significant difference between the pretest and first posttest scores of the control group as measured by the MTAI.

H_04: There is no significant difference between the pretest and second posttest scores of the control group as measured by the MTAI.

Hypotheses three and four were retained. The mean scores of the control group were very stable on the first test. The second posttest gain, while greater than that of the first posttest, also fell short of significance.

Hypotheses five and six were rejected or retained on the basis of analysis of covariance.

H_05: There is no significant difference immediately after the experimental treatment between the attitudes toward careers within music of university students who have had simulated encounters with instrumental music teaching problems and the attitudes of students who did not have this experience, as measured by the Cady Survey.

Hypothesis five was rejected at the .05 level.

$H_0$6: There is no significant difference thirty days after the experimental treatment between the attitudes toward careers within music of university students who have had simulated encounters with instrumental music teaching problems and the attitudes of students who did not have this experience, as measured by the Cady Survey.

Hypothesis six was retained. The significant difference in attitude measured by the first posttest was not found between the two groups thirty days after the experimental treatment.

Hypotheses seven to twenty-eight were rejected or retained on the basis of the t tests performed on independent variable categories.

$H_0$7: There is no significant difference between the pretest and first posttest scores of the control group as measured by the Cady Survey.

$H_0$8: There is no significant difference between the pretest and second posttest scores of the control group as measured by the Cady Survey.

Hypotheses seven and eight were retained. Control group changes were very slight.

$H_0$9: There is no significant difference between the MTAI pretest and first posttest scores of the freshmen and sophomores in the treatment group.

Hypothesis nine was rejected, being highly significant at the .01 level.

$H_0$10: There is no significant difference between the MTAI pretest and second posttest scores of the freshmen and sophomores in the treatment group.

Hypothesis ten was retained.

$H_0$11: There is no significant difference between the Cady Survey pretest and first posttest scores of the freshmen and sophomores in the treatment group.

Hypothesis eleven was rejected. The derived t value of 2.199 is within .001 of significance at the .05 level.

$H_0$12: There is no significant difference between the Cady Survey pretest and second posttest scores of the freshmen and sophomores in the treatment group.

Hypothesis twelve was rejected, being highly significant at the .01 level.

$H_0$13: There is no significant difference between the MTAI pretest and first posttest scores of the juniors in the treatment group.

Hypothesis thirteen was retained.

$H_0$14: There is no significant difference between the MTAI pretest and second posttest scores of the juniors in the treatment group.

Hypothesis fourteen was rejected at the .05 level.

$H_0$15: There is no significant difference between the Cady Survey pretest and first posttest scores of the juniors in the treatment group.

$H_0$16: There is no significant difference between the Cady Survey pretest and second posttest scores of the juniors in the treatment group.

Hypotheses fifteen and sixteen were retained.

$H_0$17: There is no significant difference between the MTAI pretest and first posttest scores of the seniors in the treatment group.

Hypothesis seventeen was retained. Although significance at the .05 level was found when Key A was used, use of the appropriate scoring keys did not produce significant findings.

$H_0$18: There is no significant difference between the MTAI pretest and second posttest scores of the seniors in the treatment group.

Hypothesis eighteen was retained.

$H_0$19: There is no significant difference between the Cady Survey pretest and first posttest scores of the seniors in the treatment group.

$H_0$20: There is no significant difference between the Cady Survey pretest and second posttest scores of the seniors in the treatment group.

Hypotheses nineteen and twenty were retained.

$H_0$21: There is no significant difference between the MTAI pretest and first posttest scores of the students in the treatment group who have not had student teaching experience.

$H_0$22: There is no significant difference between the MTAI pretest and second posttest scores of the students in the treatment group who have not had student teaching experience.

Hypotheses twenty-one and twenty-two were rejected at the .05 level of significance.

$H_0$23: There is no significant difference between the Cady Survey pretest and first posttest scores of the students in the treatment group who have not had student teaching experience.

Hypothesis twenty-three was rejected, being highly significant at the .01 level.

$H_0$24: There is no significant difference between the Cady Survey pretest and second posttest scores of the students in the treatment group who have not had student teaching experience.

Hypothesis twenty-four was retained.

$H_0$25: There is no significant difference between the MTAI pretest and first posttest scores of the students in the treatment group who are currently engaged in student teaching.

$H_0$26: There is no significant difference between the MTAI pretest and second posttest scores of the students in the treatment group who are currently engaged in student teaching.

Hypotheses twenty-five and twenty-six were retained.

$H_0$27: There is no significant difference between the Cady Survey pretest and first posttest scores of the students in the treatment group who are currently engaged in student teaching.

$H_0$28: There is no significant difference between the Cady Survey pretest and second posttest scores of the students in the treatment group who are currently engaged in student teaching.

Hypotheses twenty-seven and twenty-eight were retained.

Conclusions

Examination of the findings suggested the following conclusions:

1. The experimental group showed a significant increase in positive attitudes toward pupils as measured by the MTAI.

2. The experimental group showed a significant increase in positive attitudes toward teaching careers in music as measured by the Cady Survey.

3. The experience of coping with simulated instrumental music teaching problems had a positive effect on the generalized attitude toward teaching school music of instrumental music education majors at Arizona State University.

4. The attitude changes manifested were temporary changes. A longer treatment period or repeated treatments might have resulted in more permanent change.

5. The normal music education curriculum of Arizona State University for a thirty-day period during the Fall of 1971, as indicated by the control group measures, did not significantly affect positive attitudes toward teaching school music.

6. Freshman and sophomore students appeared to be considerably more sensitive to treatment than junior and senior students. This finding substantiates the findings reported by Pasanella and Willingham indicating that more attitude change takes place during the first two years of college than at any time during the next ten to twenty years.[1]

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[1]Ann K. Pasanella and Warren W. Willingham, "Testing the Educational and Psychological Development of Young Adults - Ages 18-25," Review of Educational Research, XXXVIII (February, 1968), 42-48.

7. Junior level students showed a significant gain in positive attitudes toward pupils in the thirty-day period following the experimental treatment. However, it is highly questionable whether this change should be attributed to the treatment. All of the juniors are enrolled in an Instrumental Music Practicum which meets for two full mornings each week. In this course, students are given the opportunity to practice teaching behaviors. Visits to elementary and secondary schools are also a part of the course. Scores of juniors in both experimental and control groups were notably higher than those of the other students. Because neither underclassmen nor seniors have taken the practicum, it is likely that this new course may have been responsible for the significance found.

8. The modified scoring keys developed by Leeds for use with the MTAI were found to be more sensitive to the attitude changes of undergraduate students than the published key.

Recommendations for Teacher Preparation

The findings of this study suggest that the following recommendations be made:

1. Further application of simulation techniques to the preparation of music teachers is encouraged.

2. More extensive use of videotape as a means of presenting teaching situations to prospective teachers

is recommended.

3. It is suggested that the videotaped materials developed for this study be expanded to include a wider variety of critical teaching situations.

4. It is recommended that the videotaped materials of this study and similar materials be used in seminars, workshops and educational methods courses as a means of developing positive attitudes toward music teaching and competence in dealing with music teaching problems.

5. Curriculum changes which permit freshman and sophomore students to have real or simulated music teaching experiences should be made. The traditional music education curriculum does not emphasize teacher preparation until the junior year and thus fails to develop positive attitudes toward teaching during the students' most formative college years.

6. More extensive use of attitude measurement in the counseling of music students is recommended. An increased awareness is needed of the importance of attitude as it relates to teaching.

Recommendations for Further Research

The findings of this study permit the conclusion that replication of this research at both Arizona State University and other teacher training institutions should be encouraged. In addition, the following research is suggested:

1. A similar study involving a longer period of treatment is recommended.

2. Due to the nature of attitude change, longitudinal research should be carried out to study the long range affective effect of encounters with simulated music teaching problems.

3. The effect of simulation experience with music teaching problems upon competence in handling real problems should be studied.

4. Correlation between the two testing instruments suggests that a generalized instrument be developed which measures attitudes in both of the areas embraced in this study.

5. Use of the modified scoring keys is recommended whenever the MTAI is administered to undergraduate college students.

6. Further research is needed concerning the relationship of attitude to music teaching competence.

7. Finally, similar research in other content areas is encouraged.

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APPENDICES

APPENDIX A

CRITICAL TEACHING SITUATIONS QUESTIONNAIRE

CRITICAL TEACHING SITUATIONS
IN INSTRUMENTAL MUSIC

Instructions: Please select the ten critical teaching situations that are in your opinion, most typical of those encountered by instrumental music teachers. You are not limited to this list. Other situations that you feel should be included in the top ten may be added in the space provided. When you have selected ten, please rank them in order of importance.

Rank		Situation
____	1.	Unbalanced chord; e.g., 2nd trumpet weaker than 1st or 3rd.
____	2.	Attendance; e.g., one-half of students show up for scheduled sectional rehearsal.
____	3.	Tardiness; e.g., two players are missing when band is ready to leave on trip.
____	4.	Unmatched pitch; e.g., wrong note in 2nd clarinet section.
____	5.	Forgetfulness; e.g., player forgets instrument or part of uniform just before performance.
____	6.	Nervousness; e.g., first-chair player "freezes" on solo.
____	7.	Suitability to instrument; e.g., child with large protruding teeth wants to play trumpet.
____	8.	Student recommendation; e.g., poor student asks for recommendation as college music major.
____	9.	Discipline; e.g., percussion players talking and "fooling around" during rehearsal.
____	10.	Unmusical noises; e.g., clarinet squeaks repeatedly.
____	11.	Parental requests; e.g., parent sends note asking that student be excused from a major public performance.

___ 12. Handling large class; e.g., handling large general music class when one doesn't play piano and no competent student accompanist is available.

___ 13. Embouchure; e.g., trombone player "shifts" embouchure resulting in thin upper register.

___ 14. Grading; e.g., irate parent accuses teacher of being unfair and subjective; demands to know basis for grades.

___ 15. Student involvement; e.g., deciding what to do with entire orchestra when only one section needs drill.

___ 16. Motivation; e.g., senior students don't want to march.

___ 17. Outlining specific objectives; e.g., superintendent asks what one specifically plans to accomplish in orchestra.

___ 18. Rhythmic inaccuracy; e.g., group tends to play dotted eighth followed by sixteenth as triplet figure.

___ 19. Intonation difficulties; e.g., flutes have difficulty playing in tune with one another even after careful tuning.

___ 20. Lack of theoretical knowledge; e.g., player doesn't know what is meant when asked to play Eb but responds to written notes with appropriate fingerings.

___ 21. Sight-reading difficulty; e.g., group breaks down when sight reading new material that doesn't appear too difficult for them.

___ 22. Teaching musical understanding; e.g., how to incorporate music history into a band rehearsal without turning the rehearsal into a lecture.

___ 23. Inappropriate style; e.g., failure to space between the notes when playing a march.

___ 24. School attitude; e.g., prevalent attitude in the school is that music is an effiminate activity.

___ 25. Immature player; e.g., young trumpet player cannot play above a G.

___ 26. Temperamental student; e.g., your only oboe player threatens to quit after being reprimanded.

___ 27. Motivation; e.g., getting students to practice prior to festival.

___ 28. Lack of knowledge; e.g., helping flutist with trill fingerings when one doesn't know the fingerings.

___ 29. Grading; e.g., arriving at a system of grading.

___ 30. Literature; e.g., securing help in selecting appropriate literature for small string group of varied ability.

___ 31. Impatience; e.g., after three reminders, student still forgets to play C# instead of C in a D major composition.

___ 32. Nervousness; e.g., superintendent or school board member steps in to observe during rehearsal.

___ 33. Convincing parent to purchase satisfactory instrument; e.g., parent is inclined to purchase inferior instrument because he is able to get it at a discounted price.

___ 34. Lack of parental support; e.g., promising student is discouraged by parents to pursue music as a career.

___ 35. Rude audience; e.g., paper is thrown at tuba bells and there is widespread talking while band is performing at a student assembly.

___ 36. Community pressure; e.g., chamber of commerce asks band to march in community parade the day before a scheduled concert.

___ 37. Criticism of musical selections; e.g., principal suggests that the next concert consist primarily of marches and popular tunes.

___ 38. Difficulty with band parents' organization; e.g., officers of the organization attempt to determine band policies or allocation of band funds.

___ 39. Tact; e.g., you are asked, in the presence of some of your students, what you think of a performance that in your opinion was very poor.

___ 40. Admission of mistake; e.g., how to avoid "losing face" when one has made a mistake such as failing to provide a clear preparatory beat.

___ 41.

___ 42.

___ 43.

___ 44.

___ 45.

___ 46.

___ 47.

___ 48.

___ 49.

___ 50.

APPENDIX B

VIDEOTAPE AUTHENTICATION FORM

CRITICAL TEACHING SITUATIONS
IN INSTRUMENTAL MUSIC

	Is this an accurate portrayal of the type of situation likely to be faced by an instrumental music teacher? Yes	No	How would you title this situation? (Please circle the appropriate title.)
Situation 1.	___	___	a. Practice Habits b. Motivation c. Low Standards
2.	___	___	a. Student Involvement b. Motivation c. Selecting Literature
3.	___	___	a. Boredom b. Discipline c. Selecting Literature
4.	___	___	a. Intonation b. Rehearsal Procedure c. Student Involvement
5.	___	___	a. Rhythmic Inaccuracy b. Sight Reading c. Student Involvement
6.	___	___	a. Organization b. Evaluation c. Motivation
7.	___	___	a. Articulation b. Rhythmic Inaccuracy c. Rehearsal Procedure
8.	___	___	a. Musical Illiteracy b. Lack of Preparation c. Knowledge of Instrument
9.	___	___	a. Rhythmic Inaccuracy b. Articulation c. Intonation
10.	___	___	a. Student Involvement b. Motivation c. Scheduling

APPENDIX C

CAREERS IN MUSIC

CAREERS IN MUSIC

Henry L. Cady

The attached opinionaire is designed to determine an individual's preferences concerning a career in music.

Instructions

A sensitized answer sheet is included with the opinionaire. Enter your name in the top part. Then read the instructions given below before using the answer sheet. Please use a No. 2 lead pencil for marking the answer sheet.

Opinionaire

The opinionaire refers to careers in music only. A list of titles for these careers is given on the next page. These career titles appear in abbreviated form in the pages that follow.

Part I of the opinionaire is concerned with music teaching only.

Part II of the opinionaire is concerned with a variety of careers in music, including music teaching.

The items in the opinionaire are presented as pairs. In working with the schedule of pairs, ask yourself the question: "Which of these two careers would I rather have, if I could choose?" Even though the choice may be between two very desirable careers or between two unwanted careers, choose one as best you can. Block out letter A or B on the Answer Sheet and ignore letters C, D, and E.

Use the following procedures:

1. From each pair of items, select the one career which you would rather have.
2. Mark the letter A or B (your choice) on the answer sheet after the number of each pair.

Example:

Opinionaire	Answer Sheet
1. dogcatcher	1. A ~~B~~ C D E
2. architect	

CAREERS IN MUSIC

Henry L. Cady

Master List of Career Titles

Part I: Teaching

1. elementary school music teacher
2. junior high school music teacher: performance
3. junior high school music teacher: general music
4. senior high school music teacher: performance
5. senior high school music teacher: general music, history, theory
6. school system music supervisor
7. college music teacher: performance, studio
8. college music teacher: teacher education
9. college music teacher: history, theory
10. private music teacher

Part II: All Careers

1. elementary school music teacher
2. secondary school music teacher: junior and senior high school
3. college music teacher
4. school system music supervisor
5. private music teacher
6. church musician
7. professional performer: opera, orchestra, chamber, jazz, etc.
8. professional conductor: opera, orchestra, etc.
9. music therapist
10. composer
11. tuner, repairman: instruments
12. business: selling music, books
13. manufacturer: music instruments, equipment
14. publishing: books about music, music series, sheet music, etc.
15. librarian: college, museum, performing organization

CAREERS IN MUSIC

Part I

1. A. elem schl tchr
   B. jr hi tchr: gen. mus.

2. A. sr hi tchr: gen. mus., hist., theory

3. A. jr hi tchr: performance
   B. sr hi tchr: performance

4. A. jr hi tchr: gen. mus.
   B. sr hi tchr: gen. mus., hist., theory

5. A. coll tchr: hist., theory
   B. private teacher

6. A. sr hi tchr: performance
   B. sch system music supervisor

7. A. sr hi tchr: gen. mus., hist., theory
   B. ccll tchr: perform., studio

8. A. schl system music supervisor
   B. coll tchr: teacher education

9. A. coll tchr: perform., studio
   B. coll tchr: hist., theory

10. A. elem schl tchr
    B. jr hi tchr: performance

11. A. coll tchr: teacher education
    B. private teacher

12. A. coll tchr: hist., theory
    B. elem schl tchr

13. A. private tchr.
    B. jr hi tchr: performance

14. A. elem schl tchr
    B. sr hi tchr: performance

15. A. schl system mus. supervisor
    B. coll tchr: perform., studio

16. A. jr hi tchr: performance
    B. sr hi tchr: gen. mus., hist., theory

17. A. private teacher
    B. elem schl tchr

18. A. jr hi tchr: gen. mus.
    B. schl system mus. supervisor

19. A. sr hi tchr: performance
    B. coll tchr: perform., studio

20. A. sr hi tchr: gen. mus., hist., theory
    B. coll tchr: teacher education

21. A. schl system mus. supervisor
    B. coll tchr: hist., theory

Part I (cont.)

22. A. coll tchr: perform., studio
    B. private teacher

23. A. jr hi tchr: performance
    B. jr hi tchr: gen. mus.

24. A. coll tchr: teacher educ.
    B. elem schl tchr

25. A. coll tchr: hist., theory
    B. jr hi tchr: performance

26. A. private teacher
    B. jr hi tchr: gen. mus.

27. A. elem schl tchr
    B. sr hi tchr: gen. mus., hist., theory

28. A. coll tchr: perform., studio
    B. coll tchr: teacher education

29. A. jr hi tchr: performance
    B. schl system mus supervisor

30. A. jr hi tchr: gen. mus.
    B. coll tchr: perform., studio

31. A. sr hi tchr: performance
    B. coll tchr: teacher education

32. A. sr hi tchr: gen. mus., hist.
    B. coll tchr: hist., theory

33. A. schl system mus supervisor
    B. private teacher

34. A. coll tchr: perform., studio
    B. elem schl tchr

35. A. jr hi tchr: gen. mus
    B. sr hi tchr: performance

36. A. coll tchr: tchr education
    B. jr hi tchr: performance

37. A. coll tchr: hist., theory
    B. jr hi tchr: gen. mus

38. A. private teacher
    B. sr hi tchr: performance

39. A. elem schl tchr
    B. schl system mus supervisor

40. A. coll tchr: tchr education
    B. coll tchr: hist., theory

41. A. jr hi tchr: performance
    B. coll tchr: perform., studio

42. A. jr hi tchr: gen. mus.
    B. coll tchr: tchr education

43. A. sr hi tchr: performance
    B. coll tchr: hist., theory

Part I (cont.)

44. A. sr hi tchr: gen. mus., hist., theory
    B. private teacher

45. A. sr hi tchr: performance
    B. sr hi tchr: gen. mus., hist., theory

Part II

46. A. elem mus tchr
    B. coll mus tchr

47. A. sec schl mus tchr
    B. schl system mus supervisor

48. A. prof performer
    B. prof conductor: orch., opera

49. A. coll mus tchr
    B. private mus tchr

50. A. schl system mus supervisor
    B. church musician

51. A. private mus tchr
    B. prof performer

52. A. manufacturer: instru., equip
    B. publisher: books, music

53. A. church musician
    B. prof conductor: oper, orch.

54. A. prof performer
    B. music therapist

55. A. prof conductor: opera, orch.
    B. composer

56. A. elem mus tchr
    B. sec schl mus tchr

57. A. music therapist
    B. tuner, repairman

58. A. composer
    B. business: selling books, mus.

59. A. schl system mus supervisor
    B. private mus tchr

60. A. tuner, repairman
    B. manufacturer: instru., equip.

61. A. business: selling books, mus.
    B. publisher: books music

62. A. manufacturer: instru., equip.
    B. librarian

63. A. composer
    B. tuner, repairman

64. A. publisher: books, music
    B. elem mus tchr

65. A. librarian
    B. sec schl mus tchr

66. A. elem mus tchr
    B. schl system mus supervisor

67. A. sec schl mus tchr
    B. private mus tchr

68. A. prof conductor: opera, orch.
    B. music therapist

Part II (cont.)

69. A. coll mus tchr
B. church musician

70. A. schl system mus supervisor
B. prof performer

71. A. private mus tchr
B. prof conductor: opera, orch.

72. A. publisher: books, music
B. librarian

73. A. church musician
B. music therapist

74. A. prof performer
B. composer

75. A. prof conductor: opera, orch.
B. tuner, repairman

76. A. sec schl mus tchr
B. coll mus tchr

77. A. music therapist
B. business: selling books, mus.

78. A. composer
B. manufacturer: instru., equip.

79. A. private mus tchr
B. church musician

80. A. tuner, repairman
B. publisher: books, music

81. A. business: selling books, mus.
B. librarian

82. A. manufacturer: instru., equip.
B. elem mus tchr

83. A. tuner, repairman
B. business: selling books, music

84. A. publisher: books, music
B. sec schl mus tchr

85. A. librarian
B. coll mus tchr

86. A. elem mus tchr
B. private mus tchr

87. A. sec schl mus tchr
B. church musician

88. A. music therapist
B. composer

89. A. coll mus tchr
B. prof performer

90. A. schl system mus supervisor
B. prof conductor: opera, orch.

91. A. private mus tchr
B. music therapist

92. A. librarian
B. elem mus tchr

93. A. church musician
B. composer

94. A. prof performer
B. tuner, repairman

95. A. prof conductor: opera, orch.
B. business: selling books, music

Part II (cont.)

96. A. coll mus tchr
    B. schl system mus supervisor

97. A. music therapist
    B. manufacturer: instru., equip.

98. A. composer
    B. publisher: books, mus.

99. A. church musician
    B. prof performer

100. A. tuner, repairman
     B. librarian

101. A. business: selling books, music
     B. elem mus tchr

102. A. manufacturer: instru., equip.
     B. sec schl mus tchr

103. A. business: selling books, music
     B. manufacturer: instru., equip

104. A. publisher: books, music
     B. coll music tchr

105. A. librarian
     B. schl system mus supervisor

APPENDIX D

RAW DATA TABLES

APPENDIX D

RAW DATA TABLES

Experimental Group

Student Number	Class Level	MTAI (Key A) Pre	MTAI (Key A) Post I	MTAI (Key A) Post II	MTAI (Key B) Pre	MTAI (Key B) Post I	MTAI (Key B) Post II	MTAI (Key C) Pre	MTAI (Key C) Post I	MTAI (Key C) Post II	Cady Pre	Cady Post I	Cady Post II
1*	Sr.	51	61		23	22		19	27		44	37	
2*	Sr.	33	27	-11	14	20	05	11	10	00	40	39	41
3*	Sr.	-25	-04	-27	01	10	-05	04	10	-07	28	30	26
4*	Sr.	-22	20	11	19	32	33	-03	16	08	42	45	46
5	Sr.	81	77		47	39		34	22		37	43	
6	Sr.	21	26	18	22	27	23	11	18	22	43	48	48
7	Sr.	55	40	46	29	19	35	20	21	23	37	40	32
8	Sr.	17	37		24	34		16	15		34	32	

* denotes student teaching experience

Student Number	Class Level	MTAI (Key A) Pre	Post I	Post II	MTAI (Key B) Pre	Post I	Post II	MTAI (Key C) Pre	Post I	Post II	Cady Pre	Post I	Post II
9	Sr.	60	88		48	50		39	50		37	42	
10	Sr.	26	53	20	36	33	17	17	19	09	47	49	45
11	Jr.	72	50	46	51	40	41	25	20	14	35	38	47
12	Jr.	32	44	24	18	41	31	17	26	16	45	45	40
13	Jr.	44	34		42	33		26	17		34	29	
14	Jr.	36	17	53	27	19	38	16	07	33	40	38	40
15	Jr.	44	50		26	16		23	28		34	38	
16	Jr.	52	49	36	36	25	20	21	20	16	42	45	47
17	Jr.	73	48	58	35	33	39	24	13	26	37	43	37
18	Jr.	15	26	08	22	31	25	08	15	11	46	45	39
19	Jr.	39	36	46	22	24	34	03	11	26	37	35	32

Student Number	Class Level	MTAI (Key A) Pre	Post I	Post II	MTAI (Key B) Pre	Post I	Post II	MTAI (Key C) Pre	Post I	Post II	Cady Pre	Post I	Post II
20	Jr.	16		45	13		28	12		32	31		35
21	Jr.	30	45	48	33	43	45	10	22	18	32	33	29
22	Jr.	28	17	36	21	15	28	05	04	15	43	42	41
23	Jr.	27	40	27	13	18	15	11	12	18	20	28	23
24	Jr.	79	90	90	46	48	58	27	39	40	35	42	43
25	Jr.	26	-07		31	13		20	04		32	30	
26	Soph.	56	78		52	59		28	40		28	27	
27	Soph.	69	94		38	58		22	27		26	23	
28	Soph.	17	22	16	03	30	29	02	13	13	32	38	33
29	Soph.	10	-13	-13	07	20	15	05	12	-01	45	47	45
30	Soph.	23	40	36	13	18	23	11	24	28	25	28	27

Student Number	Class Level	MTAI (Key A) Pre	MTAI (Key A) Post I	MTAI (Key A) Post II	MTAI (Key B) Pre	MTAI (Key B) Post I	MTAI (Key B) Post II	MTAI (Key C) Pre	MTAI (Key C) Post I	MTAI (Key C) Post II	Cady Pre	Cady Post I	Cady Post II
31	Soph.	21	40		24	32		08	25		43	46	
32	Soph.	45	65	58	28	48	48	19	37	21	43	48	48
33	Fr.	49	48	33	25	24	25	21	34	13	36	31	38
34	Fr.	82	78		53	68		23	32		47	45	
35	Fr.	-05	07	-28	-05	-01	-01	-02	11	08	26	31	30
36	Fr.	58	60	44	32	39	31	22	28	26	44	50	48
37	Fr.	17	20	15	20	21	17	07	07	10	28	33	33

Control Group

Student Number	Class Level	MTAI (Key A) Pre	Post I	Post II	MTAI (Key B) Pre	Post I	Post II	MTAI (Key C) Pre	Post I	Post II	Cady Pre	Post I	Post II
38*	Sr.	17	30	10	09	14	-03	17	05	00	27	25	23
39	Sr.	22	20	18	16	14	12	07	07	05	36	35	36
40	Sr.	12	01	21	03	05	12	-05	-04	08	28	27	28
41	Sr.	85	87	84	46	42	39	27	27	27	48	48	47
42	Sr.	16	20		16	17		08	10		34	33	
43	Jr.	52	41	46	37	39	43	28	27	34	33	32	33
44	Jr.	82	90		42	42		33	33		32	33	
45	Jr.	56	39		42	48		30	22		48	50	
46	Jr.	58	69	61	45	41	51	24	34	29	36	37	34

* denotes student teaching experience

Student Number	Class Level	MTAI (Key A) Pre	Post I	Post II	MTAI (Key B) Pre	Post I	Post II	MTAI (Key C) Pre	Post I	Post II	Cady Pre	Post I	Post II
47	Jr.	73	58	58	44	41	42	38	31	35	45	43	45
48	Jr.	18	20	35	19	20	22	17	12	22	34	33	34
49	Jr.	52	57	54	19	30	46	23	19	33	30	33	39
50	Jr.	65	27	40	31	20	27	25	15	22	47	43	47
51	Soph.	45	63	54	44	51	51	27	39	31	33	32	33
52	Soph.	38	31	25	27	29	23	17	16	15	23	27	24
53	Soph.	08	05	24	10	03	08	-08	-01	09	35	34	34
54	Soph.	12	19	11	10	11	04	08	17	07	30	31	3I
55	Fr.	38	40		41	41		16	24		30	32	
56	Fr.	-09	-12	-10	-19	-22	-22	-05	-05	-05	08	07	07
57	Fr.	34		41	20		25	19		21	46		47